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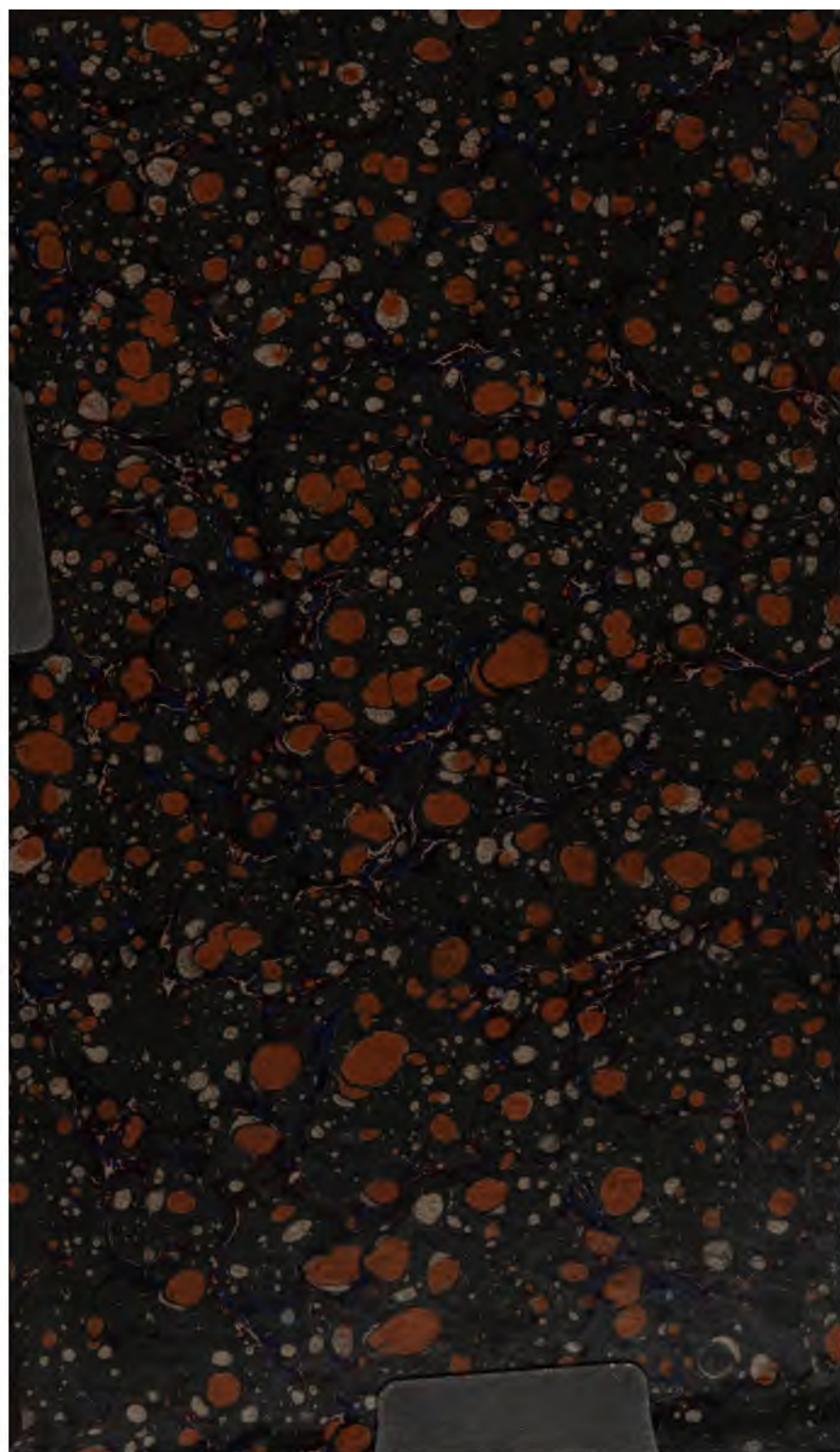
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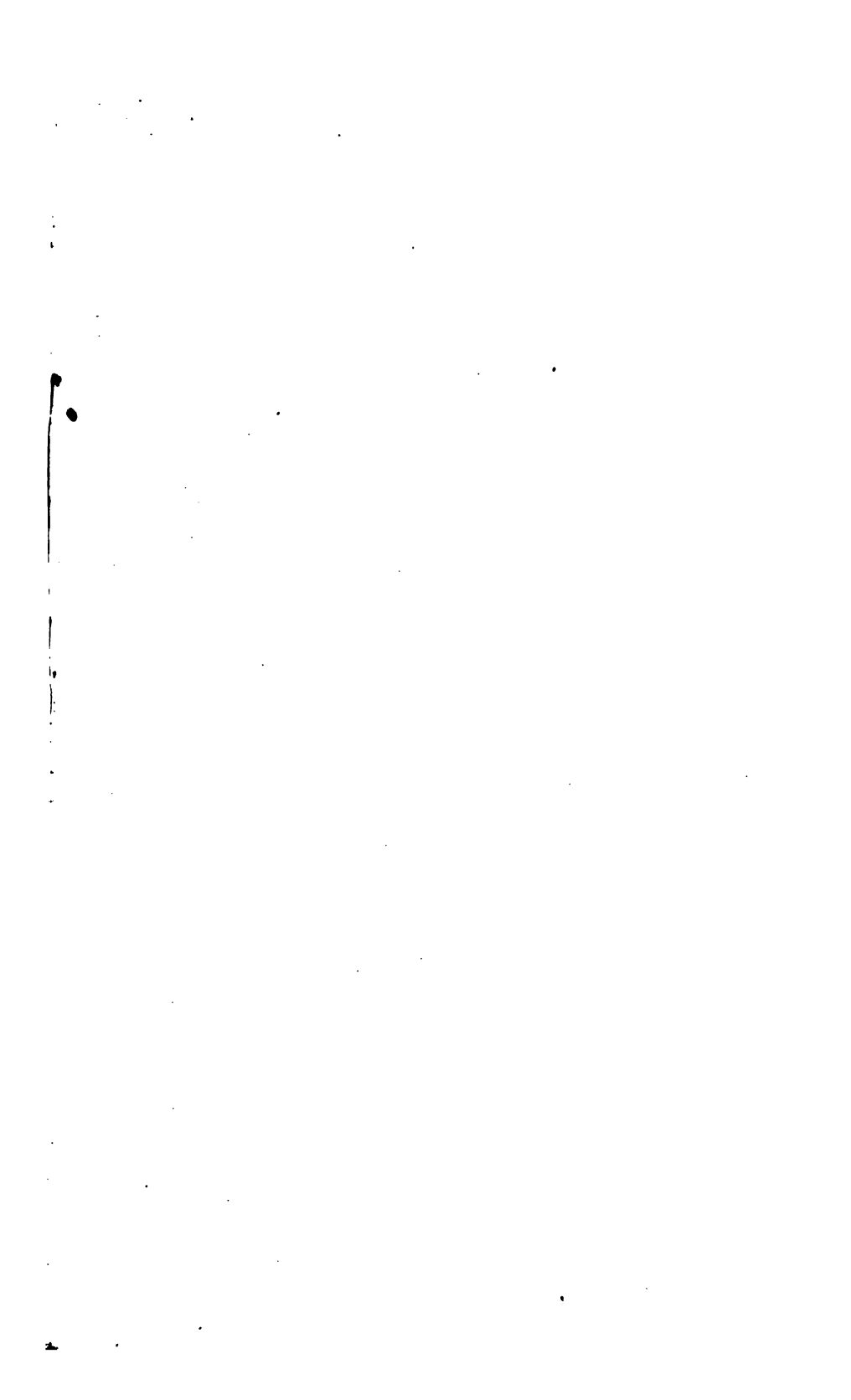
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CONDUCTED BY

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LORD WALSLINGHAM, M.A., LL.D., F.R.S., &c.

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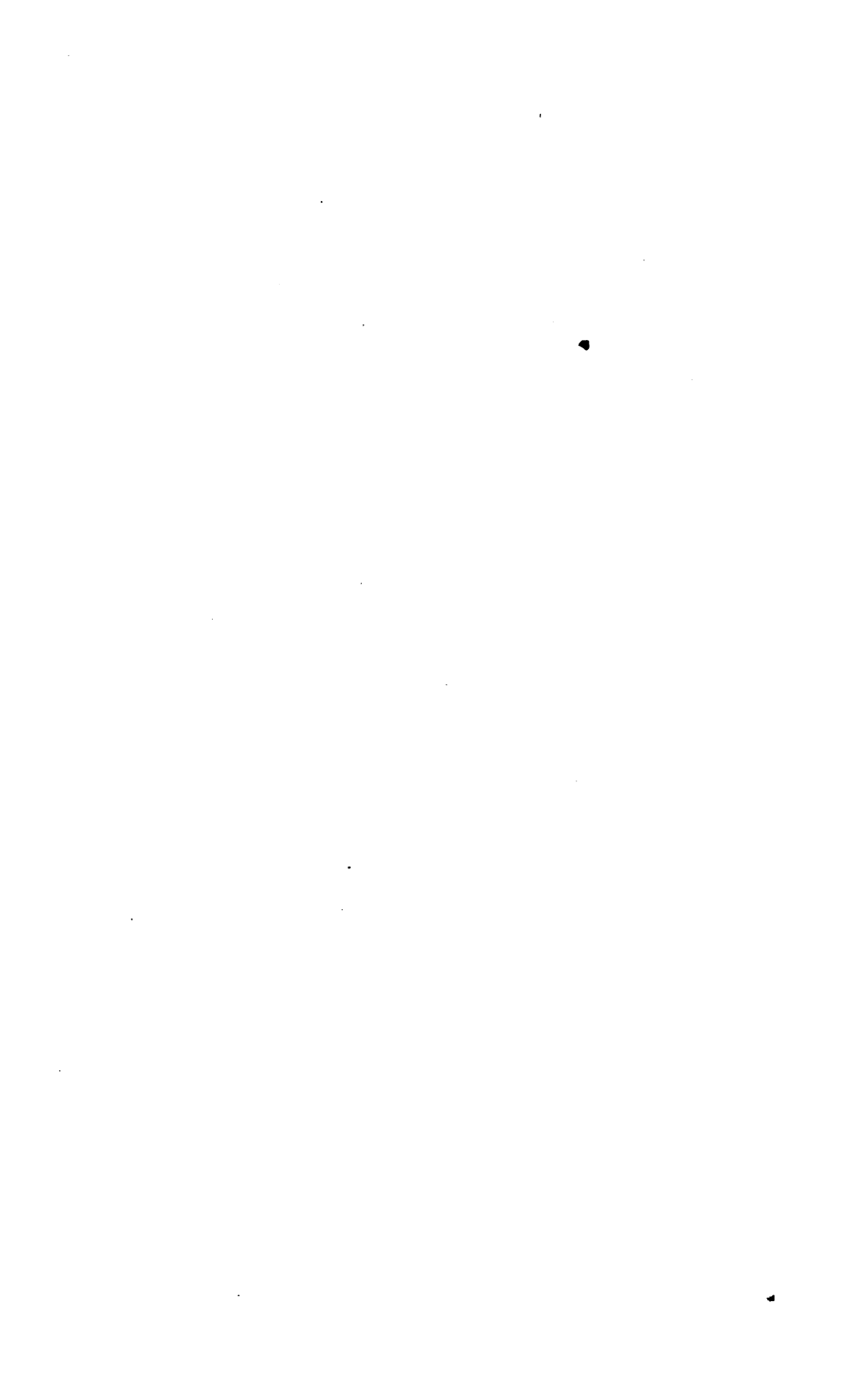
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[VOLUME XXXIII.]

LEPIDOPTERA OBSERVED IN GLEN LOCHAY.

BY KENNETH J. MORTON, F.E.S.

At page 260, vol. vi, 2nd ser., I gave an account of the *Neuroptera* observed in Glen Lochay, Perthshire, during a holiday spent there in June, 1895. The following notes deal with the *Lepidoptera* taken on the same occasion. My thanks are due to Mr. Barrett for his assistance in naming the smaller species.

The late Dr. Buchanan White wrote regarding Breadalbane* (in which district Glen Lochay is situated) that it had more alpine and boreal plants than any other district in Britain, but few alpine and boreal insects, while in Rannoch just the reverse was the case. The botanical part of this proposition has no doubt been proved by the researches of many botanists in both districts, but I fear the entomological work done in Breadalbane and Rannoch respectively is so much out of proportion that a fair comparison can hardly be made as regards insects. I do not know whether Dr. White ever modified his opinion or not; but I may say about *Neuroptera* his conclusions as above stated hardly hold good, seeing *Eschna borealis* and *Somatochlora arctica*, dragon-flies truly alpine and boreal in their distribution, are both found in Breadalbane as well as in Rannoch. Perhaps with regard to *Lepidoptera* also, the contrast has been too strongly drawn. My own list contains a number of alpine species, although I did not

* Ent. Mo. Mag., vol. iv, p. 248.

work with that special knowledge of this Order which is essential to success. The conditions suited to alpine insects are quite as favourable, in most respects, in the one district as in the other; in woodland species Breadalbane may be weak; as Dr. White pointed out, there is less wood there than in Rannoch.

Butterflies were abundant, and at least twelve species were seen. Of the whites, *P. brassicae* was nearly always in evidence, although usually represented by single specimens; *P. napi* was frequent, and I think *P. rapae* also occurred, although I do not appear to have kept examples. *Argynnis Selene* and *A. Euphrosyne* were both common, the latter most numerous in the earlier part of the month and later giving place to *A. Selene*. *Vanessa urticae* occurred in hibernated examples, and several broods of larvæ; another *Vanessa* (probably *V. Atalanta*) was seen. A single ♂ of *E. Janira* was taken on the last day of my stay. *Cænonympha Typhon*, var. *Laidion*, was especially abundant on a high lying boggy tract (over 1500 feet), and occurred singly elsewhere, but was less generally distributed than *E. Epiphron*: it shows an extensive range of coloration on the upper-side, running from (males) dark brown (almost as dark as in var. *Philoxenus*, but duller in tone) through different grades of tawny to a pale bleached looking condition (females); on the under-side ocellation may be absolutely non-existent or highly developed, reaching in the hind-wings to six eye spots with white pupils, the greater development, however, in no way indicating an approach in other respects to the typical form of *Typhon*, and in the fore-wings there is an equally great but not correlative variability in the transverse bar, which may be absent, reduced to a wavy line, or increased to a pale elongated blotch. *C. Pamphilus* abundant, some of the examples large and brightly coloured. *Erebia Epiphron* was widely distributed on the hills both to the north and south of the River Lochay, and was abundant on some of the grassy slopes; one day during a long excursion I had this interesting little butterfly as a pretty constant companion for several miles. First noticed about June 8th, but the examples then seen probably belonged to a small colony which had established itself at a lower elevation than usual (below 1000 feet), and it was not till ten days or so later that the species was out on the high grounds. *Lycæna Astrarche*, var. *Artaxerxes*, was common on a *Helianthemum* bank of a small burn. *L. Icarus* very common. *L. minima* abounded on a small sandy flat on the banks of the Lochay. Some of the butterflies went to considerable elevations, following the course of the hill streams. To see the two fritillaries, *L. Icarus* and *Artaxerxes*, *C. Pamphilus*, joined more rarely

by a straggling *E. Epiphron*, all flying about in a sheltered hollow, was a picture of butterfly life not often enjoyed in these northern parts.

Macroglossa bombylifformis (the narrow bordered species) flew sparingly over the moist ground in the low-lying part of the Glen, and a few specimens were secured hovering over *Pedicularis*. *Nemeophila russula* was taken one day on the lower ferny slopes of Meal Ghaordie. *N. plantaginis* exceedingly common, and ranging far up on the hill sides; the var. *hospita* frequent and easily recognised on the wing. *Hepialus humuli* swarmed on the low ground, and *H. velleda* was of course everywhere. *Bombyx quercus*, var. *callunæ*, flew over the moors commonly, and the opportune advent of some magnificent females bred from Arran larvæ proved its existence in greater number than would otherwise have been supposed. *Drepana lacertinaria* taken occasionally at dusk; *D. falcataria*, var. *pallida*, beaten during the day from birch and oak, some of the examples very large and pale.

Cymatophora duplaris, L., flew very commonly late on warm evenings, and was occasionally beaten from birch during the day. *Acronycta psi*, a few at rest; *Xylophasia rurea* common; *Rusina tenebrosa*; *Agrotis strigula*; *Noctua plecta*, *N. brunnea*, *Hadena dentina*, and *H. rectilinea*. *Cucullia umbratica* frequent. *Habrostola tripartita*, one example. *Plusia chrysitis*, *pulchrina*, *gamma* and *interrogationis*, all more or less common; the last two flew by day, but all four, along with *C. umbratica*, were irresistibly attracted in the evening by the flowers of the melancholy thistle (*Carduus heterophyllus*). *Anarta myrtilli* frequent. *Phytometra viridaria* not rare.

Rumia luteolata; hawthorn was scarce in the part of the Glen where I lived, and so was this usually common insect. *Metrocampa margaritaria*, just coming out at end of June. *Amphydasis betularia*, one ♂ from oak. *Boarmia repandata* common. *Psodos coracina*, locally common on the hills both north and south of the river. *Asthena luteata*, common on the banks of the river. *Acidalia fumata* common. *Cabera pusaria* frequent; *C. exanthemaria* common. *Scodiona belgiaria*, a few specimens; *E. atomaria*, everywhere. *Bupalus piniaria*, scarce on account of the absence of Scotch fir on the ground worked. *Lomaspilis marginata* common; *Larentia cæsiata* common; *L. salicata* very common on rocky ground, and extending far up the hills; *L. viridaria*, the usual pest. *Emmelesia albulata* common; *E. adæquata*, one of the commonest Geometers. *Eupithecia pulchellata*, *pygmæata*, *satyrata*, var. *callunaria*, *castigata*, *nanata*, *vulgata*, were the only "pugs" taken. *Hypsipetes ruberata* one; *Melanthia ocellata* very common. *Melanippe hastata*, one worn specimen; *M. tristata* common.

and fine; *M. sociata* and *montanata* common. *Coremia munitata*, a few; *C. designata*, frequent; and *C. ferrugata* common. *Camptogramma bilineata* common. *Cidaria corylata* very abundant; *C. suffumata*, a few on the hills; *C. silaceata*. *Tanagra chærophyllata* very common.

Scoparia atomalis common; *S. muralis*; *S. alpina*, was most frequent at a high elevation on Meal Ghaordie and also seen elsewhere. *Pyrausta ostrinalis* common, and ascending the hills to a considerable height; although so common, it is not easy to forget this bright little insect, which was quite a feature in some places over 2000 feet as it flew in great numbers over the pretty pink-starred cushions of *Silene acaulis*. *Herbula cespitalis* also common on the hill sides. *Scopula alpinalis*,* just coming out towards the end of the month in the same localities as *E. Epiphron*. *Botys fuscalis* abundant.

The "plumes" were represented by *Platyptilia ochrodactyla*, *Mimæseoptilus bipunctidactyla*, and *Aciptilia tetradactyla*.

Crambus pratellus; *C. furcatellus*, seen on one occasion only near the top of Meal nan Tarmachan, where two examples were taken on a very hot day; *C. inquinatellus* very common locally; *C. hortuellus*.

Of the *Tortrices* and *Tineæ*, I can do little more than give the names:—*Tortrix ribeana*, *viburnana*, and *ministrana*. *Amphisa Gerningana*. *Penthina pruniana*, *Staintonianana*, *marginana*. *Sericoris irriguana*, *Daleana (metallicana)*. *Mixodia Schulziana*, common everywhere on the hills; *M. palustrana*. *Cnephasia politana* and *musculana*. *Bactra lanceolana*. *Phoxopteryx unguicella*, *biarcuana*, *myrtillana*. and *Lundana*. *Grapholitha subocellana* and *Penkleriana*. *Padisca bilunana*, *Halonota Pflugiana* and *trigeminana*. *Dicrorampha plumbana*. *Catoptria ulicetana* and *cana*. *Eupœcilia nana*, *angustana*, and *ciliella*. *Xanthosetia zægana*. *Conchylis straminea*.

Tinea rusticella and *oleocella*. *Lampronia rubiella*. *Incurvaria Ehlmaniella*. *Nemophora Schwarziella*. *Prays Curtisellus*. *Plutella cruciferarum*. *Pleurota bicostella*. *Depressaria arenella*. *Ceophora pseudospretella*. *Endrosis fenestrella*. *Glyphipteryx Thrasonella* and *Fischeriella*. *Argyresthia conjugella* and *sorbiella*. *Gracillaria syringella*. *Gelechia longicornis*, *terrella*, *ericetella*, *proximella*, *triparella*. *Coleophora Fabriciella* and *nigricella*. *Schreckensteinia festaliella*. *Elachista atricomella*, *obscurella* (?), *albifrontella*. *Tischeria complanella*. *Buculatrix aurimaculella (nigricomella)*.

Larvæ of many kinds were abundant, but these I neglected, and thus no doubt lost the opportunity of adding some interesting species to my list.

Uddingston, N.B.: October, 1896.

* Meyrick gives "Perth to Ross" as the range of this species; it occurs, however, in Stirlingshire, Dumbartenshire, and the adjoining parts of Argyleshire.

LIFE-HISTORY OF *ARISTOTELIA TETRAGONELLA*, STX.

BY EUSTACE R. BANKES, M.A., F.E.S.

Seeking comfort from the well-worn adage, "Better late than never," I will now proceed to put on record an interesting discovery made between three and four years ago. On May 4th, 1893, I started off on a long expedition to the saltmarsh in this district, where *Aristotelia tetragonella* had been taken by the Rev. C. R. Digby and myself in the previous year, as recorded in Ent. Mo. Mag., ser. 2, vol. iv, p. 46 (where in line 18 of my note I accidentally wrote "hind margin" for "dorsal margin"), intent on making a thorough search for the then unknown larva of this very local species which has never yet been found outside England. After reaching and carefully surveying the spot, I soon noticed some small plants of *Glaux maritima* looking brown and sickly, and at once felt pretty sure that the wished-for prize was within my reach. Such proved to be the case, for in due time from the larvæ then secured about two dozen imagines were bred from June 17th to July 4th. I also reared the moth in 1894, though only three specimens of it which emerged July 13th to 30th from larvæ collected on May 19th, and again this year when a nice series appeared, June 19th to July 10th, from larvæ brought home on May 12th.

LARVA.

The following description of the full-fed larva was mainly drawn up on May 6th, 1893, and slightly amplified on May 21st, 1894, and May 13th, 1896. I follow such well-known writers as Messrs. Buckler and Stainton, and Drs. Chapman and Wood in counting the head as the first segment of the larva.

Length, 7·5—8 mm. *Greatest breadth*, 1·1—1·2 mm.

Head polished, clear amber-yellow, much narrower than the prothoracic segment; upper mouth-parts dark, but here and there showing orange-red; ocelli distinct, black, polished. *Prothoracic segment* yellowish-white, with a polished dark brown dorsal plate, nearly straight on its anterior and semicircular on its posterior margin, and divided across the centre into two equal parts by a yellowish-white line. *Body*, which only narrows abruptly from the broad mesothoracic segment to the head, but tapers gradually towards the anal extremity, is, with the exception above mentioned, of a beautiful crimsonish coral-red: skin smooth and shining. The interstices between the first four segments showing broadly and conspicuously whitish as the larva crawls. On the anterior part of the sixth segment there is above each side a conspicuous white spot, and in some individuals an oval dark internal blotch, presumably representing embryo *testes*, shows distinctly through the back of the ninth segment. *Warts* extremely small and inconspicuous, black and polished, resembling black pin-points. There are no noticeable lines, though they are here

and there just traceable in glimpses of a yellowish-white colour. *Bristles* pale, but very short and inconspicuous. Anal segment yellowish- or reddish-white, with a small blackish-brown polished plate. *Ventral surface* clear yellowish-white under the first four and the last segments, but tinged with red under the intermediate ones. *Legs* polished, horny, blackish, ringed with yellowish-white, somewhat paler internally. *Prolegs* semitransparent watery-white, with the usual dark rings near the extremities.

In its earlier stages the larva has the body clear shining amber-yellow like the head; it afterwards assumes a reddish tinge, which gradually deepens and asserts itself more and more strongly as it approaches maturity. In other respects the young much resembles the full-fed larva, except that its black warts, though quite small, are much more distinct.

The egg is probably laid on the stem of the food-plant, *Glaux maritima*, in June or July, and if, as seems likely, it hatches that same year, the larva presumably, since there is no evidence of a second brood, hibernates while very young; at any rate, it is still quite small in the spring when it proceeds to feed up. It certainly enters the central stem close above the surface of the ground, and then burrows downwards, completely hollowing out the subterranean portion of the stem, and neatly ejecting its deep crimson-red frass through the entrance hole, beside which it forms a small heap. It lives entirely inside the hollow tube thus formed, and upon reaching the very base of the stem whence the separate rootlets spring, it penetrates into one of these and continues its downward course, hollowing it out as far as it can go, and living in the gallery: it then retraces its steps back to the base of the stem, and entering another rootlet treats it in a similar manner. I have sometimes found the larva as much as four inches or so below the surface, generally of course head downwards, but occasionally, when it is retracing its steps and has found room to turn round, in the reverse position: when extracted from its burrow it is fairly stout, and by no means so slender as one would expect from its habits. If one plant is not sufficient, it readily moves to another and begins work upon it in the same manner; at first some of the leaves of the infected plant turn brown, and gradually the whole plant sickens and begins to die away. In confinement a few larvæ, when apparently unable to find the special parts they prefer, enter the growing stems of the shoots even comparatively high above the ground, eating out their contents and living in the hollow tubes thus formed, the frass being ejected through holes near the upper ends of the mines. When full-fed the larva leaves its burrow to seek a suitable spot for pupa-

tion: it is rather subject to the attacks of an ichneumon-fly which has not yet been identified. In collecting the larvæ, it is absolutely necessary to carefully cut up a small deep sod round each infected plant, and this is by no means easy in our locality for them, as the soil largely consists of a very tough fibrous mass of generations of rush roots, well saturated with water.

PUPA.

Descriptions of the pupa made on June 16th, 1893, and July 7th, 1894, agree with a later one made on June 8th, 1896, which last, being rather more ample than the previous ones, is given below. The specimens described had assumed the pupal stage only a few days previously.

Length, 4 mm. *Greatest breadth*, 1.1—1.2 mm.

Rather long and thin, somewhat flattened dorsally and ventrally, and tapering gradually towards the anal extremity. *Skin* smooth, polished, and shining: hairs and bristles mostly short and inconspicuous. *Eyes* showing through as dark spots. *Antennal cases* lying between, and of almost equal length with, the wing-cases. *Head* rather broad and rounded, blackish-brown above, paler beneath. *Thoracic segments* orange-brown. *Wing-cases* orange-brown, reaching to the middle of the sixth abdominal segment: round their extremities is seen, on the last segments over which they project, a broad margin, noticeably paler than the ground-colour. *Abdomens* brownish-orange, with its third and following segments obscurely darker on the dorsal surface anteriorly, the posterior margin of each being dingy orange with no tinge of brown in it. Extremity of anal segment blackish, armed with several orange-coloured hooked bristles. In both sexes the only "free" segments are the fifth and sixth abdominal ones.

The pupa is enclosed in a neat elongate white silken cocoon coated with sand, and spun on the surface of the soil or attached to stems close to it; in confinement the cocoon is sometimes spun against the side of the flower-pot.

Dr. Chapman has kindly furnished me with a most careful and detailed description of the pupa from the specialist's point of view, but since it would be obviously out of place in a short notice, I must forbear to reproduce it here.

It may be as well to mention that Mr. J. Hartley Durrant has obligingly examined the neurulation, &c., of the imago for me, and finds that the species belongs not to *Gelechia*, Hb. (as now restricted), to which genus it has been referred in the original and subsequent notices in this Magazine, but to *Aristotelia*, Hb., in which Mr. Meyrick has rightly included it in his Handbook.

The Rectory, Corfe Castle :

November 14th, 1896.

GELECHIA (SITOTROGA) CEREALELLA, OLIV.

BY C. G. BARRETT, F.E.S.

I am indebted to Mr. Charles Whitehead, of Barming House, Maidstone, for an opportunity of studying this species in all its stages, and although the subject may not be entirely novel, I think that some details will be of interest. Mr. Whitehead writes, "It is rather interesting to corn growers and dealers that *Gelechia cerealella* comes over from the United States of America in maize. The maize I have simply swarms with it; moths keep coming out, and I find the larvæ and pupæ in the grains. I had it from the United States in June, and from the end of that month the moths have been emerging. I presume that it was infested when it came over, it could not have become so here, as it has been in large glass-topped cases; indeed, I have never heard before of its doing any harm in granaries in Great Britain. It is the "Augommois moth" which has done so much harm in France, and is so destructive in many parts of the United States. There are evidently two broods there at least. I have now traced it through all its stages. I have to-day (October 27th) found three eggs *on wheat* among which I put moths a fortnight ago."

Some of these eggs, with larvæ, pupæ, and moths Mr. Whitehead has very kindly sent me. The eggs are ovate, a little wrinkled, yellowish or pale yellow-brown, becoming in time more pinkish. They are thrust, in a little group, into the tiny crevice which runs down the furrow of the grain of wheat. Probably they are forced into the chaffy portion at the base of a grain of maize.

The larva seems to be yellowish throughout. When full grown it is one-fourth of an inch in length, excessively sluggish, with extremely small head partially withdrawn into the second segment; legs and prolegs minute and obscure, body thick, excessively wrinkled; segments deeply divided. Head pale yellowish, with a brown spot on each lobe, and very small, darker brown jaws. Body, with the minute legs, fatty-yellow, shining, devoid of markings. So stupidly inert as apparently to be fit only to lie in a cavity of the grain and eat the starchy contents, packing away its excrement in white granules in the cavity behind it. Probably it feeds in more than one grain, but it hollows out all the softer portion, and if it leaves the grain, does so by a small round hole which is closed by a round lid, of the skin not entirely removed. Probably the same is done before pupation, which takes place in the larval cavity, lined for this purpose with white silk.

The pupa is ovate and rather short, thickest across the base of the abdomen; at first pale yellow, unicolorous, so that the organs are not very perceptible, but after a time these become more distinct, the head-cover bent down; eyes dark and round, placed almost underneath, the front of the head being produced forward and very fully rounded; limb cases well marked; wing-covers very long, narrow, and ex-

tending to within a short distance of the anal extremity; all these portions light brown, smooth, shining, and without sculpture; segmental rings* yellowish, rounded up rather fully; anal segment extremely blunt; cremaster broad, with short, widely divergent points.

The pale yellowish moth is sufficiently well known to require no description here; the only exception to the monotony of its colour is in the fronts of the anterior tibiæ, which are dark smoky-brown; indeed, there are not many instances among the *Lepidoptera* of so great constancy in colour from the egg to the perfect insect.

No alarm need, I think, be felt at the immigration of the insect now noted; it appears unable to maintain itself in our moist climate. In my own experience the moth has been taken in plenty about the granaries of the docks at King's Lynn, yet no instance of its spreading abroad among the barns or grain stores of Norfolk was, so far as I can ascertain, ever observed.

39, Linden Grove, Nunhead, S.E.:

November 5th, 1896.

TEN DAYS' COLLECTING (*COLEOPTERA*) AT BRANDON, SUFFOLK

BY CLAUDE MORLEY, F.E.S.

On September 16th last, I met Mr. Ernest Elliott, F.I.Inst., who came from the opposite direction, at Brandon Station, and we immediately settled down to work the Coleopterous fauna of the district. The weather during the second half of September was anything but propitious for Entomology, being very wet and often cold, but, with the elements thus against us, the appended condensed list will show that deserted Suffolk (for who has collected here since Kirby's day, when it was one of the most prolific of the English counties?), at least in the N.W., can hold its own with most districts as far as *Coleoptera* are concerned.

Licinus depressus, very sparingly, from Thetford to Lakenheath, under stones and upon the roads—upon the heath and in the fen—and never near chalk. Of *Anchomenus* several species were taken: *A. gracilis*, swept in the marshes at dusk, and at the base of willows, with *A. piceus*, *A. viduus*, var. *mæstus*, and *A. fuliginosus* (abundantly), amongst which latter one or two curiously convex, rufous varieties, with dark legs and a strong basal depression on the elytra, occurred. *Amara consularis*, rarely, under stones, with *A. fulva*. *Harpalus picipennis*,* and, on the sandhills at Lakenheath, many *H. anxius*. *Oodes helopioides*, rare, at the base of willows, in the marshes. *Calathus fuscus* and *flavipes*, abundant, with a single

* This is, perhaps, the first British record of *Harpalus picipennis* and *H. anxius* from a inland locality.—G. C. C.

Pterostichus versicolor, upon Thetford Warren and in the Lakenheath sandpits. *Hydroporus granularis* occurred in a ditch in Childenhall Fen, and *Ochthebius aratus* in a pond at Elveden. *Cercyon minutus* and *Philonthus micans* were taken from moss by the Little Ouse. *Quedius semianeus* and *Q. lateralis*, the latter in fungi, with *Autalia impressa*, *Homalota aterrima*, and *H. longicornis*, and seven others of the genus. *Ocyptus cupreus*, *brunnipes*, and *compressus*, beneath stones, occasionally. *Stenus cicindeloides*, *bupthalmus*, and *pusillus*, and *Homalium casum* (abundant), were obtained by sweeping, and *S. biguttatus* and *Stiliculus orbiculatus* from beneath a piece of matting, with *Falagria obscura*, at the base of a poplar, in the fens. *Microglossa nidicola*, abundantly, upon one plant of *Senecio Jacobææ* and *Lathrobium terminatum* and *brunnipes*, at the base of willows. Great numbers of *Epipeda plana*, and a few *Prognatha quadricorne*, were found under bark of a prostrate aspen at Undle Hall. *Micropeplus margarita*, common, at the bottom of a bracken stack near Downham. *Staphylinus stercorarius*, *Choleva Watsoni*, and other common carrion feeders were taken from dead rabbits. *Exochomus quadripustulatus* was quite a pest, occurring everywhere, from the sandy, fir-planted plateaux to the swampiest fens, and specimens showing fine variations of the dorsal markings were secured. *Olibrus pygmaeus*, sparingly, on *Achillea millefolium*, and *Phalacrus caricis*, commonly, on reeds; *Coccinella hieroglyphica* and *Scymnus capitatus* were swept in the fir plantations. Only three species of *Meligethes* were seen: the ubiquitous *M. æneus* and *M. murinus*, which was common on *Echium vulgare*, with a few *M. obscurus*. All the *Brachypteri* were found in *Linaria* flowers. A few *Atomaria apicalis*, and one or two *A. fuscipes*, occurred upon reeds. *Abræus globosus* was taken from moss on willows, and *Hydnobius punctatissimus* by sweeping *Teucrium* on Session Heath.

Psammobius sulcicollis was found, for the first time in Suffolk since Stephens' record, under a stone on Thetford Warren. Very few species of *Aphodii* were seen: *A. porcus*, two by Mr. Elliott, *A. sordidus*, and *obliteratus*, the two former on Palmer's Heath, being the best—all in *stercore ovino*, with *Onthophagus ovatus*. *Geotrupes Typhæus*, sparingly, at Maidcross Hill. *Cryptohypnus riparius*, singly, beneath willow bark, by the Little Ouse. Of *Phytophaga* a great number of species, mostly of the commonest, were noticed. *Bruchus cisti*, common, on *Cytisus scoparius*. *Donacia bidens*, one (? very late), swept in the marshes at dusk. *Chrysomela didymata*, on thistles, at Lakenheath, and *C. distinguenda*, fairly common, on *Trifolium*, at Brandon. *Galeruca lineola* was swept sparingly from *Lythrum salicaria*, by the Wangford Drain, with many *Aphthona lutescens* and *cærulea* and *Haltica oleracea*, *Thyamis gracilis*, *Psylliodes chalcomera*, *chrysocephala*, and *picina* (seen); and in a ditch at Lakenheath Mr. Elliott took *Cassida equestris*. *Thyamis fuscicollis* and *Phyllotreta melana* (one ♀) also occurred. *Apion* was represented by about eighteen species, of which *A. Spencei*, *vorax*, *marhicum*, *tenuis*, *confluens*, *pomonæ*, *vicinum* (common), and *fuscirostre* (in great numbers upon *Cytisus*) were the best. *Orchestes ilicis*, which I have always found rare in Suffolk, was swept with *Hylastes ater* beneath pines, and *Mecinus circulator* in the White Fen. *Cleonus sulcirostris* occurred in the sand-pits, and was also swept from *Teucrium scorodonia*; *Trachyploëus scabriculus*, *Erirrhinus vorax* and *tortrix*, were found upon *Populus tremula*. *Sitones griseus* was obtained very sparingly on broom at Downham, and a ditch at Lakenheath, but it was not taken about the sand-hills;

S. humeralis and *S. flavescens* put in an appearance by promiscuous sweeping, as also did *Phytobius quadrituberculatus*. *Nanophyes lythri* was abundant upon *Lythrum*, and *Gymnetron noctis* in the flowers of *Linaria vulgaris*, but we failed to find the rare *G. linariae*, which Mr. C. G. Barrett took in the allotments here in 1871.* In one field at Town Street we found two of Mr. J. J. Walker's captures†—*Baris abrotani*, common at roots of *Reseda lutea*, and *Ceuthorrhynchus asperifoliarum*, one only, at those of *Echium vulgare*, together with *C. geographicus*, in some numbers. In all we noted just over three hundred species of *Coleoptera* between September 16th and 26th, but could nowhere find the "Brandon Sandhills," the nearest being at least two and half miles out of the town—at Wangford.

Everton House, Berners Street,
Ipswich: November, 1896.

WATER-BEETLES FROM THE ISLAND OF TONGATÁBU.

BY J. J. WALKER, R.N., F.L.S.

A few weeks ago my friend Dr. V. Gunson Thorpe, R.N., F.R.M.S., Surgeon of my old ship, the "Penguin," during her second surveying commission, kindly gave me a little tube containing some water-beetles of two species, which he had taken in the island of Tongatábu (lat. 21° 5' S., long. 175° W.). This locality appearing to me to be of more than ordinary interest, I submitted the insects to Dr. Sharp, who has kindly determined the larger one as a form of *Hydaticus Goryi*, Aubé, the other being our well-known *Rhantus pulverosus*, Steph. This latter species is of enormously wide distribution, its already known range (cf. Sharp, Monogr. Dytiscidæ, Trans. Royal Dublin Soc., vol. ii, ser. 2, p. 609) extending from the South of England eastward through Central and Southern Europe, North Africa, Mesopotamia, China, Japan, and Java to Australia, New Caledonia, and New Zealand; a closely allied species, *R. annectens*, Sharp, having been described from Samoa. It is, to say the least, somewhat startling to receive a British water-beetle from an island on the opposite side of the globe, almost in the centre of the tropical Pacific Ocean. *Hydaticus Goryi* is recorded from Australia, New Caledonia, and Malasia. Dr. Thorpe informs me that Tongatábu is a low island composed of upraised coral, entirely destitute of streams or ponds, the only source of fresh water being the rain, caught in tanks or pits, cut in the solid coral rocks by the natives, and it was in these "catch-pits" that the beetles were taken. They had communicated to the alcohol in which they were preserved a pleasant scent, somewhat resembling that of orange-peel, a scent I have noticed in some Chinese species of *Hydaticus*, but not in any of our British *Dytiscidæ*, so far as my experience goes.

23, Ranelagh Road, Sheerness:
December 5th, 1896.

* cf. Ent. Annual, 1872, p. 42.

† cf. Ent. Mo. Mag., xxi, pp. 86, 87.

ON *PLAGITHMYSUS*: A HAWAIIAN GENUS OF LONGICORN
COLEOPTERA.—SUPPLEMENT.

BY D. SHARP, M.A., F.R.S.

Since the previous descriptions of the species of *Plagithmysus* were written I have received from Dr. Gestro, of the Genoa Museum, another distinct form, discovered by the distinguished Italian traveller, Signor d'Albertis, upwards of twenty years ago.

PLAGITHMYSUS ALBERTISI, n. sp.

Gracilis, fusco-rufus, prothorace femoribusque nigricantibus. his basi testaceo: elytris parum ornatis, sordide testaceis, undique dense punctatis, ad suturam tantum obsoletius albido-lineatis, ante lineas vage fuscescentibus.

Long., 13 mm.

Of the form of *P. varians*, but distinguished by the vague coloration, which has a peculiar faded appearance. Antennæ red. Head red, more or less suffused with black. Thorax black above, dull, the usual bands of white pubescence excessively indistinct though broad; on each flank a definite, shining, impunctate space. Elytra narrow, densely punctate, without any glabrous area; close to the suture there may be detected on each a very faint line of white pubescence, diverging before reaching the base; in the fork formed by the divergence of the two lines there is a more or less indistinct dark area. Legs very long, tibiæ obscure red, the posterior pair coarsely hirsute.

West Honolulu; February 25th, 1874. Signor d'Albertis.

Three male individuals. Some time ago another individual of the species from the same source was sent to me to be named by Frère Belon, of Lyons.

In the characters of *Plagithmysus*, given in the previous volume, there is a serious verbal error:—on p. 238, line nine, the word "thick" occurs twice; the second occurrence is erroneous; instead of "longer than the basal thick part," it should run, "longer than the basal part."

Cambridge: December, 1896.

ON *COCCUS AGAVIUM*, DOUGLAS.

BY R. NEWSTEAD, F.E.S.

COCCUS (GYMNOCOCCUS) AGAVIUM, Doug.

I feel sure this interesting species should be placed in the genus *Ripersia*; but at the same time the highly chitinised antennæ of seven joints, and the somewhat unique structure of the anal ring are abnormal; I have not seen a similar structure in any *Dactylopid* hitherto examined.

It has no relation to *Coccus*, for in this latter the anal ring is without hairs in any stage (Cockerell must be mistaken in saying that *Coccus tomentosus* has a setiferous anal ring). I have much pleasure in appending structural details, and also drawings.

♀ adult. *Antennæ* (fig. 2) highly chitinous, with wide articulations; 3rd joint with a spine.

Mentum biarticulate.

Anal ring of six hairs (fig. 3), the chitinous portions in three equal parts; each separated from the other; the orifice never circular, but crescent-shaped, as in the genus *Coccus*.

Legs short, chitinous, and scarcely longer than the antennæ; tarsi longer than tibiae.

Dermis (fig. 4), above with numerous short conical spines.

Anal lobes obsolete, in their place a long hair.

Larva clearly dactylopid.

Anal lobes obsolete; indicated by hairs, as in the adult. *Antennæ* (fig. 1).

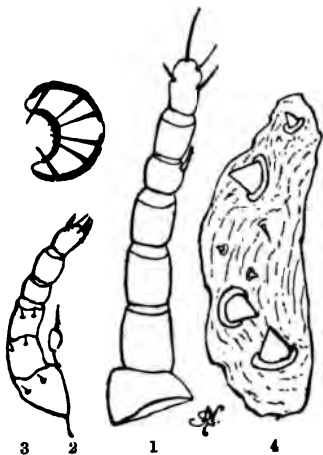
Anal ring as in the adult, but all the parts proportionately smaller.

Dorsum with six rows of short conical spines, not truncate as in *Coccus*.

Grosvenor Museum, Chester:

November 26th, 1896.

[I am disposed to agree with Mr. Newstead, and am always glad to have my errors of commission and omission corrected.—J. W. D.]



The Cestrid of the Indian Elephant bred.—In the note on this subject which appeared in this Magazine for September, 1896, p. 212, there is a mis-statement. As a fact the larvæ live in the *stomach and intestines* of their host, and pass out by the latter. In *Pharyngobolus* they live in the throat. There are three different species on the Elephant:—

1. *Cobboldia elephantis*, Cobb. Indian Elephant. Larva and imago known.
2. *Cobboldia loxodontis*. African Elephant. Larva known.
3. *Pharyngobolus africanus*, Br. Larva in the throat of the African Elephant, and very different from those of the two former species, both of which live in the stomach and intestines. Imago unknown.

—FR. BRAUER, Vienna: December, 1896.

Lipoptena cervi, Linn., in Dorset.—I have just received specimens of this fly from my friend J. C. Mansel Pleydell, Esq., taken on his estate at Whatcombe, Dorset, last summer off the roe deer. The only other English captures were two specimens in

the New Forest by Mr. George Samouelle in September, 1821. One of these is in my collection, the other in the National Collection at South Kensington. It is admirably figured in Curtis's British Entomology under the name of *Hæmobora pallipes*. Dr. B. White records its occurrence in Glen Tilt in the Scottish Naturalist, vol. iv, p. 185. An allied species, *Hippobosca equina*, Linn., occurs commonly in the New Forest, but is not confined to it, as it is found as far west as Glanvilles Wootton.—C. W. DALE, Glanvilles Wootton: December 10th, 1896.

Pycnoscelus indicus at Bognor.—Mr. Guernonprez has recently shown me a specimen of *Panchlora* (*Pycnoscelus*) *indicus*, Fab., taken at a house in Bognor. It is a wide spread insect, being apparently indigenous to India and Ceylon, but is also found in the United States and in Mexico. I am not aware that this species has been before taken in this country, but possibly it may yet become naturalized like so many other cockroaches.—MALCOLM BURE, Bellagio, East Grinstead: December 11th, 1896.

Limnophilus elegans, C., at Rannoch.—My friend Mr. Wm. Reid handed me two specimens of *Trichoptera* which he had taken for me at Rannoch this year during May in Carrie Wood; these proved to be *Neuronis rufus*, Scop., and the much rarer *Limnophilus elegans*, Curt. Of the latter he thinks that he saw more, although he did not trouble about them, thinking that they might belong to a common species. The capture of this latter species is of great interest, as it verifies a record by Mr. McLachlan, who, in his "Trichoptera Britannica," says, "I saw (but did not capture) a single specimen at the Black Forest, Rannoch." Probably the reason why this species has eluded capture by Trichopterists at Rannoch is that we do not visit the locality during the month of May, my own visits have hitherto been during April and after the middle of June.—JAMES J. F. X. KING, 207, Sauchiehall Street, Glasgow: November, 1896.

Great abundance of Halesus guttatipennis.—Nearly a year ago (Ent. Mo. Mag., February, 1896, p. 41) I recorded the finding by my friend Mr. G. C. Dennis, of York, of *Halesus guttatipennis* in profusion at Pickering, in North-East Yorkshire. The species up to that time had been so exceedingly rare in Britain—only three specimens having been recorded, and all taken singly—that I determined if possible to visit the locality myself this autumn, to fill up my series, and also secure specimens for all my Trichopterist friends. Mr. Dennis was at Pickering about October 20th, and found that the species was then out in large numbers; but it was not until the 28th that I was able to join him, and see its habits for myself. On that morning I started off, although the previous night there had been keen frost, and the ground was still perfectly white with it a great part of the journey from Huddersfield to York, where I was joined by Mr. Dennis. We reached the ground at Pickering about 11.30 a.m., by which time the sun fortunately was shining brightly, and we soon found that my misgivings, owing to the frost, were quite groundless. *Halesus guttatipennis* was seen to be flying freely (quite naturally, and without being disturbed) in the sun, and settling on the bushes and hedgerow of hawthorn, on the river side. The sun, however, very soon became overcast, and with it the flight of the insect entirely ceased. On that account they were still easier to catch, as they

became comparatively lethargic, and where the bushes could be beaten over an umbrella they came out in numbers into it. Other bushes were searched, and the insects were found settled on the twigs all over the bush, from close to the ground (and even among the grass and rubbish under the bushes) to the topmost twigs. From one particular hawthorn—a small one too—we must have boxed quite a hundred specimens, probably more. With them occurred *Chatopteryx villosa* in considerable numbers, and also a few *Anabolia nervosa*, but the last was evidently nearly over.

The part of the river on which *H. guttatipennis* occurs in such profusion is most ordinary in appearance, with no aquatic plants growing in it, and flowing through meadows of grass, &c., and with only a few trees and bushes on its banks. On one side (the side we alone worked), at a short distance from the water, a low hawthorn hedge borders the footpath, and nearer the water a few isolated hawthorn and alder bushes. The hawthorns seemed to be the greatest attraction to the *Trichoptera*, probably, however, because they afforded the best shelter. Both Mr. Dennis and myself had soon boxed as many specimens as we felt disposed to set, and we left the ground about 3.30 p.m.

Some of my captures were not killed for several days, and on November 1st I was greatly astonished to find in one of the boxes a male *H. guttatipennis* paired with a female *C. villosa*; the pairing lasted to my knowledge for some hours, and probably for a still considerably longer period. The time when *H. guttatipennis* is "out" is apparently from the middle of October to the middle of November.—Geo. T. PORBITT, Crosland Hall, Huddersfield: November 11th, 1896.

Female of Megaloceraea erratica dimorphic.—Mr. W. Chaney, of Woodside, South Norwood, has lately sent me some ♂ and ♀ examples of a *Megaloceraea*, calling my attention to the short legs and antennæ of the females, and pointing out that although the specimens of this sex looked very different from those of *erratica*, the males taken in the same locality were apparently identical with the typical form of that species. Had I received the females only, I should certainly have thought they were specifically distinct. The basal joint of the antennæ is very little longer than the pronotum, the rest of the antennæ is distinctly shorter than in the typical ♀, and all the legs are considerably shorter and stouter; in colour this form agrees with the var. *ochracea*, Fieb., but I cannot find that either Fieber or Reuter mentions the shorter limbs as characteristic of the variety. The males taken with these females are, as Mr. Chaney says, to all appearances typical *erratica*. The specimens were found in a marshy place near Woodside on September 4th, 1895; and Mr. Chaney writes, "it was then just coming out commonly, many of the specimens being immature;" he also says that a day or two later his son brought him specimens of the same form from the chalk hills near Caterham; so that it would appear not to be particular as to its style of locality. It is a form which I do not appear to have met with myself, but it is one which might be easily overlooked in the field.—EDWARD SAUNDERS, St. Ann's, Woking: December 4th, 1896.

Albinic aberration of Dichrorampha senectana, Gn.—On June 3rd of the present year I was fortunate in taking on the Isle of Purbeck (Dorset) coast a beautiful

male albino of the rare and extremely local *Dichrorampha senectana*, Gn. The antennæ, palpi, head, thorax and abdomen are creamy-white, the antennæ being ringed with fuscous. The fore-wings are glossy creamy-white, inclining to pale grey towards the costa and termen, thickly irrorated for the most part with pale ochreous scales; the ordinary pale costal geminations, as well as all the usual metallic-leadens bars and the transverse lines, together with the indications of the dorsal blotch, are clear shining white; the terminal black dots are only just traceable; the cilia are white, with the base narrowly, and the apical portion broadly, fuscous. The hind-wings are glossy whitish; the cilia white, with the basal and apical portions pale fuscous. The under-sides of the wings, the legs, and other parts of the insect are all proportionately pale. It is by far the most extreme form that I have ever seen of any species of *Dichrorampha*.—EUSTACE R. BANKES, The Rectory, Corfe Castle: November 18th, 1896.

[A somewhat similar aberration of another species of this genus, labelled "England, Knaggs," stood in Zeller's series of *plumbagana*, Tr. It is, however, certainly not that species, the shape of the termen being quite different, and it must be an aberration of either *petiverella*, L., or *quæstionana*, Z. It is very pale, shining, whitish-ochreous, almost cream-coloured, and the hind-wings are still paler, the head and thorax are perhaps slightly darker than the fore-wings, and the abdomen is pale whitish-cinereous. The dorsal blotch on the fore-wings is pale buff, and the two ante-apical metallic costal streaks of the typical form are very indistinctly indicated by a darkening of the ground-colour, three very pale cinereous spots represent the normal dark black terminal spots, the usual black spots preceding the dorsal blotch being still less distinct, and the other markings are not apparent; the cilia are shining white.

In considering this specimen to be a form of *quæstionana* rather than of *petiverella*, I am guided by the shape of the dorsal blotch and by the direction and position of the ante-apical costal streaks, but I have long been doubtful to which species it should be referred. The specimen is a ♂, and is now in Lord Walsingham's collection.—JOHN HARTLEY DURRANT].

Caradrina ambigua, Fb., in the Isle of Purbeck.—I am pleased to be able to record the occurrence in the Isle of Purbeck, S. E. Dorset, of the very local *Caradrina ambigua*, Fb., which has already been found both in Hampshire (Isle of Wight) to the east and in Devonshire to the west of this county. A beautiful specimen, captured near Swanage in the summer of 1892, has recently been received for identification from Mr. Percy M. Bright, and another, taken in the same neighbourhood about the end of August of the present year, was discovered by me when looking through Mr. Frederick Whitehead's captures last month. I am not aware that this species has been met with in Cornwall as yet, though it very probably exists there, but it has certainly occurred, and in a few localities pretty freely, in every other county on the south coast of England, and seems on this side of the channel to be especially attached to the actual coast line.—ID.: December 7th, 1896.

Zeugophora flavicollis, Marsh, at Colchester.—While beating for larvæ I was agreeably surprised to find a specimen of this rare beetle in my umbrella, and by

visiting the spot frequently I met with several others ; but it seems to be a very scarce species, and I could find it nowhere else in the district, though I looked for it in all directions where the conditions seemed favourable.*—BERNARD S. HAEWOOD, Colchester: November 20th, 1896.

Saprinus æneus, F., and *immundus*, Gyll.—While collecting *Coleoptera* last August at Deal, I met with eight examples of a *Saprinus* in a small piece of dung on the sand-hills. An examination at the time led me to refer them to *S. æneus*, F. I have just been looking at them more critically, and find among them some specimens having the characters of *immundus*, Gyll., others with those of *æneus*, F., and yet others which are intermediate between them.

From the circumstances in which these specimens were found, there is a strong presumption that they are all one species ; and although I have no doubt that *S. æneus* and *immundus* are good and distinct species, and that these must probably be referred to the latter, it appears to me that none of the characters given in our books will serve to separate them satisfactorily.

Let us examine the characters given by one or two authors:—Fairmaire and Laboulbène (*Faune de France*, p. 276), who copy from Marseul (*Ann. Soc. Ent. Fr.*, 1852, p. 462), make the junction of the fourth dorsal stria with the sutural stria (*æneus*), or the reverse (*immundus*), the great point. Acloque (*Faune de France*, p. 252) agrees with Fairmaire, but makes a strong feature of the *entire absence* of the third dorsal stria in *immundus*. Cox (*Handbook Col. Brit.*, vol. i, p. 419) appears to have copied Fairmaire as regards the junction of the striae, but makes *immundus* a dull, and *æneus* a very shiny, insect. (Fairmaire says of *immundus*, "assez luisant"). Fowler (*Col. Brit.*, vol. iii, p. 210) makes the principal distinction lie in the shiny space on the elytra being comparatively large outside the fourth dorsal stria (*æneus*), or the reverse (*immundus*), and says the latter may be easily distinguished from *æneus* by its darker and less metallic colour, and by the much closer punctuation of the elytra. He, however, says no reliance can be placed on the absence or presence of the junction between the fourth and sutural striae.

Now, in the eight examples referred to, the fourth stria is sometimes joined to the sutural stria, and sometimes free. The third stria is indicated in some, and totally wanting in others. The amount of the punctuation outside the fourth stria is very variable, making the smooth space outside the stria as long as, or much less than, that within. Nor is the colour constant, though they are all much less dull than examples sent me by Mr. J. J. Walker from Yarmouth. On the other hand, they have none of them the brassy lustre of *æneus* taken in the London district.

I believe Canon Fowler has alluded to this difficulty before in the *Ent. Mo. Mag.*, but I am unable to give the reference. The hope that some *Coleopterist* who has studied the genus may be able to give some constant character to separate these species induces me to again call attention to the subject.—E. A. NEWBERY, 12, Churchill Road, Dartmouth Park, N.W.: November 16th, 1896.

[The note in the *Ent. Mo. Mag.*, referred to by Mr. Newbery, will be found in vol. xvi, p. 275 ; I do not there speak of any difficulty in distinguishing the species which appear to be quite distinct, but merely refer to the untrustworthiness of the characters drawn from the sutural striae ; *S. immundus* is a darker and less metallic

* I found this insect in abundance on young aspens at Mendel in the Austrian Tyrol in July last.—G. C. C.

insect, and though certainly "assez luisant" compared with many insects, is of a duller appearance than *S. æneus*, owing to the closer punctuation, which covers a larger part of the elytra than in the latter species; the small shining space outside the dorsal stria in *S. immundus* compared with the larger space in *S. æneus*, is an almost infallible character, but, in the rare cases of intermediate specimens, it will be found that the teeth of the tibiæ will often afford a good character, as, in fresh specimens, they are distinctly larger in *S. immundus*; considerable abnormalities, however, in the teeth of the tibiæ of the *Histeridæ* are not uncommon, and occasionally they appear to get partially, if not altogether, worn away; it must be admitted that in several of the species considerable difficulty is likely to arise if one character only is considered; although by taking all the characters into account, it is usually quite easy to distinguish the species.—W. W. F.]

Hypera tigrina, &c., at Dover.—It may interest Coleopterists to hear that *Hypera tigrina* may still be taken in its old locality at the top of the cliffs east of Dover. I captured three fine specimens last August, on wild carrot. At the roots of the same plant, *Harpalus parallelus* (?), *sabulicola*, &c., occurred. *Olibrus particeps* was obtained by sweeping only the chalk downs.

By sweeping *Lotus*, &c., on the Folkestone Road, *Apion subulatum* and *Waltoni* were found, while a patch of *Onobrychis* near St. Radegund's yielded *Apion livescerum* and *flavimanum*, and a single specimen of *Gymnetron labile*.—ID.

Coleoptera in the Cardiff district.—The past season has been by no means an unprofitable one, and particularly marked by abundance of individuals in many good species. In the early spring I can record a few specimens of *Evasthetus scaber*, *Trogophloeus pusillus*, *Homalium planum* and *iopterum*, and *Coryphium*. For a short time towards the end of May a *Malthodes*, which seems likely to turn out *nigellus*, was abundant on the banks of the Taff, where *Hyperaspis*, *Hydroporus septentrionalis*, and *Limonius cylindricus* also occurred. A month later the dry bed of the river was alive with *Bembids*, the commonest by far being *B. prasinum*, *punctulatum*, and *testaceum*; *B. decorum*, *tibiale*, *femoratum*, and *concinnum* also occurred, but I did not get *atrocaruleum*, which was found last year. Other collecting yielded *Mordellistena abdominalis* (1), *Choragus Sheppardi* (1), *Mycetophagus atomarius*, *Encephalus complicans*, *Phyllotreta sinuata*, *P. crucifera* (a pest on turnips this summer), and *Lissodema 4-pustulatum* (1). Autumn collecting has produced single specimens of *Lebia chlorocephala*, *Apteropeda globosa*, *Chrysomela didymata*, and *Pseudopsis sulcata*; fungi have been swarming with *Gyrophæna lævipennis*, and in a bit of marshy ground *Longitarsus ochroleucus* was plentiful, with a few *Hippuriphila Modeeri* and *Aphthona atrocærulea*. *Aphodius porcus* was common in October.—B. TOMLIN, The Green, Llandaff: December 10th, 1896.

Coleoptera in the Hastings district.—The following are among the most noteworthy *Coleoptera* taken in the Hastings district during a fairly successful season:—*Gyrinus distinctus* and *Suffriani* in ditches, on the "saltings," in January, and at Winchelea, in July; *Haliphus obliquus* and *Cnemidotus impressus*, singly, in the saltings; *Dichiotrichus obsoletus*, sparingly, under stones near the beach; *Hydroporus vittula* and *dorsalis*, fairly abundant, in a pond at Ewhurst. *Gyrinus urinator*, about twenty, by netting the lower part of submerged posts in the river Rother, in

January; two were also taken on the surface in May, but none have appeared this summer. *Axinotarsus pulicarius*, a single specimen, at Winchelsea, near which place were taken *Abdera bifasciata* (1) and *Lissodema 4-pustulatum*, in June; the same day I took, within a square half mile, about twenty *Coccidula scutellata*, by beating sedges and sweeping the surface of the water, a dozen *Donacia cinerea*, and about as many *D. braccata*; I afterwards took about two dozen more *D. cinerea*, by picking them off the reeds just at dusk. With the *C. scutellata* I got a stray *Choragus Sheppardi*, one *Hypera Julinii*, two *Eubrychius velatus*, four *Phytobius notula*, and one *P. Waltoni*; a dozen or more of the last named were swept from *Polygonum amphibium* at Ewhurst, with one *Rhinoncus inconspicuous*. From an old hedge at Ewhurst I got several each of *Acalles turbatus*, *Pogonocherus dentatus*, *Apion pubescens* (from willow), *Tetratoma ancora* (1), *Clinocara minor* (1), and a couple of the Homopteron, *Isus coleopratus*. By sweeping on a railway bank a good many *Cryptocephalus morae* and *Ceuthorrhynchidius Chevrolati*, *Orchestes pratensis* (6), and *Conopalpus testaceus* (1) were obtained, with several *Edemera lurida*, a few *Mordellistena pumila*, eight *Cassida obsoleta*, and one *C. hemisphaerica*. In the Eastbourne district, a few *Cryptocephalus bilineatus*, and one *Aphanisticus pusillus* occurred in an old chalk quarry, and from ditches I got a number of *Scirtes orbicularis*, about thirty *Laccophilus variegatus*, and one *Bagous nedulonus*, with a good many *Donacia dentata* and *bidens*, in July, and in September four *L. variegatus* and nine *Hydrophilus piceus*, one of which had apparently just recently emerged, as its elytra were quite soft. *Athous difformis*, which used to be so local, seems to be spreading, as I have taken it in fair numbers at places so far apart as Winchelsea and Ewhurst.—W. W. ESAM, Eagle House, St. Leonards: November 13th, 1896.

Xantholinus distans, Kr., in Caithness.—In the month of August, 1892, I took a few examples of a *Xantholinus* amongst loose stones in a stone heap on the cliff, east of Thurso. At the time I thought they were immature specimens of the commoner kinds. On examining them at home afterwards, I came to the conclusion they might possibly be the rare *X. distans*, Kr., and placed them under this species in my collection. Lately, through the kindness of Mr. J. J. Walker, who has compared them with an example from Loch Callater in Mr. Champion's collection, they have been identified as true *X. distans*. If I remember correctly, the species was not at all uncommon in the stone heap.

I should also like to take the opportunity of correcting a mistake in my list of *Coleoptera* from the Thurso district, given in Vol. xxix of the Ent. Mo. Mag., p. 142. In that list, *Tachinus pallipes* must be removed, and the name *Tachinus proximus* substituted for it. The specimens of this last species were very variable, but all, I think, undoubted *T. proximus*.—ALFRED THORNLEY, South Leverton Vicarage, Lincoln: December, 1896.

Obituary.

Arthur Dowsett, F.Z.S., F.E.S., died somewhat suddenly at his residence at Reading on November 6th, aged 60. He was widely known as a Naturalist in the fullest sense of the term, and had amassed large ornithological and entomological

collections. He was one of the founders of the Reading Natural History Society, and had been its President since 1882. His decease will be greatly mourned by a large circle of friends, to whom his habitual courtesy and wide knowledge had much endeared him. But nowhere can his loss be more deeply felt than at the town in which he had so long resided, and by the Members of the Society over whose affairs he had so long presided. He was elected a Fellow of the Entomological Society of London in 1874, and of the Zoological Society in 1876.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *October 19th, 1896.*—Mr. R. C. BRADLEY in the Chair.

Mr. Bradley exhibited a specimen of *Antithesia salicella* arranged in a natural position of rest on an oak leaf, to show its striking resemblance to a bird excretion. Mr. W. Harrison, six females of *Lasius umbratus*, taken in Edgbaston, only about one and a half miles from the centre of Birmingham. This capture was all the more remarkable as Mr. Martineau had never met with the species in the Midlands; and although it was not usually uncommon, yet he did not know of any other local record for it. Also a specimen of *Vanessa L-album* which had been taken by Mr. B. May, of Moseley, about the year 1877, at rest on a tree trunk at Henley, in Arden. The capture was somewhat discredited at the time, but there does not seem to be the slightest reason for doubting its genuineness. Mr. May has long since given up Entomology and parted with all his collections, excepting this one specimen. Mr. Harrison also showed a continental specimen for comparison; that from Henley was decidedly smaller and darker. Mr. A. H. Martineau, an imago and full grown larva of *Ammophila sabulosa* obtained under the following singular conditions. His brother watched the wasp engaged in burrowing, at Newquay; after he had seen it make its hole, fetch a larva and store it in the hole, lay an egg with it and then fill up the hole, he caught the wasp and dug up the larva, which was a fat green *Noctua*, and placed them together in a match box, where he left them and forgot them. Some time afterwards, chancing to open the box, he found the wasp, but the *Noctua* larva had quite disappeared, and in its place was a full-grown wasp larva, which had hatched and developed under these uncongenial conditions.—COLBRAN J. WAINWRIGHT, *Hon. Secretary.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *November 13th, 1896.*—DR. SHARP, President, in the Chair.

Mr. Fleet exhibited a copy of the first number of a work by Thomas Denny, entitled, "Illustrations of Lepidopterous Insects found in the vicinity of Cambridge." It contained several coloured plates, and was printed and published at Cambridge, but bore no date. Also some specimens of *Zygana exulans* from Braemar and *Noctua sobrina* from Rannoch. Mr. R. Farren, some "Jumping Beans;" the "Bean" is the seed of a Mexican euphorbiaceous plant inhabited by a Tortrix larva, whose movements cause the seeds to roll about and even to make short jumps.

Mr. Rickard, some British beetles and a common earwig with very long "forceps." This latter gave rise to some discussion on the wings and flight of this insect, Dr. Sharp expressing the opinion that it seldom resorts to flight.—C. J. WILKINSON, *Hon. Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
November 12th, 1896.—T. W. HALL, Esq., F.E.S., Vice-President, in the Chair.

Mr. R. Adkin exhibited long and varied series of *Acidalia marginepunctata* in illustration of his paper. Colonel Partridge, two dwarf red bred specimens of a second brood of *A. trilinearia*, from Epping Forest. The annulated spots, which appear in the other members of the genus, were developed in these examples. Mr. Tutt had seen some of Mr. Merrifield's specimens bred under abnormal temperature, and they closely resembled these in the spots and colour. Mr. Auld, a specimen of *Zygana loniceæ*, from Chattenden, with semi-diaphanous under-wings in part. Mr. Lucas, specimens of *Periplaneta australasia*, from Kew Gardens and Bishop's Waltham, consisting of males, females and immature (wingless) examples, and said that the females had the yellow ring to the pronotum wider than in the male. Mr. Tutt, (1) specimens of *Orrhodia vaccinii*, very close in their coloration to *ab. glabra* of *O. erythrocephala*; (2) a series of *Zygana exulans*, from Le Lauteret, the smallest from about 9000 feet elevation, where the herbage was sparse, the larger were from 7000 to 8000 feet elevation; (3) two specimens of *Lithosia lutarella*, of the deep yellow form found all over the high Alps; they were seen assembling in large numbers one very damp morning, in company with *Acidalia flaveolaria* and *Cleogene lutearia*; (4) both sexes of *Acidalia ochrata*, and stated that our British species is the *perochraria* of Stephens; (5) a series of the very beautiful *Psecadia pusiella*, a Tineid found in abundance at La Grave, and looking much like a large form of *Cerostoma sequella*. Mr. Barrett, on behalf of Mr. Day, of Cheshire, a series of forms of *Tephrosia biundularia* taken in March and May; also, a very fine series of the Unst forms of *Noctua festina*, sent to him by Mr. J. J. F. X. King. Mr. Tunaley stated that he had frequently found late *T. crepuscularia* at the same time as early *T. biundularia*, in Sutton Park, Birmingham. Mr. R. Adkin read a paper, entitled, "Notes on the occurrence of *Acidalia marginepunctata*, and observations on the early stages of the second brood of *Cyaniris (Lycæna) argiolus*." A discussion took place, Messrs. Tunaley, Tutt, Mansbridge and Barrett taking part, all bearing testimony to the value of Mr. Adkin's close observation of the latter species.

November 26th, 1896.—C. G. BARRETT, Esq., F.E.S., Vice-President, in the Chair.

Mr. Barnett, of Royal Hill, Greenwich, was elected a Member.

The Meeting was devoted to a special exhibition of varieties, and was largely attended.

Mr. Mansbridge showed series of *Abraxas grossulariata*, including the Leeds smoky forms; of *Polia chi*, including var. *suffusa* and v. *olivacea*, with the beautiful West Riding form; and of *Hibernia aurantiaria*, with many melanic forms. Mr. Oldham, *Brenthia (Argynnis) Euphrosyne* with few markings on upper wings in contrast to well marked hind-wings; a xanthic *Epinephele Janira* and putty coloured

and yellow females of *Odonestis potatoria*. Mr. Adkin, the various forms of *Boarmia repandata*, *Camptogramma bilineata* (including black Irish specimens), *B. cinctaria* and *Thera juniperata*, with beautiful specimens of *Cidaria corylata*, v. *albocrenata*, *Abraxas grossulariata*, black *Acidalia marginepunctata*, black-banded *Eubolia bipunctaria*, banded *Anaitis plagiata* and unicolorous *Ematurga atomaria*. Mr. Mitchell, specimens of *Saturnia pavonia (carpini)*.—(1) dark female; (2) gynandromorphous form bred from Wicken, and an example of *Chrysophanus Phlaeas* with the large and elongate spots nearly forming a band. Mr. Dollman, a series showing the variation of *O. potatoria*; a dwarf *Anthocharis cardamines*, and an example of the same species with the dark tips of the primaries suffused and extending inwards. Mr. Ashdown, a series of *Coccinella hieroglyphica* varying from entirely testaceous, through spotted forms to entirely black, all from Oxshott. Mr. Barrett, series of the following species from very many localities:—*Melanippe hastata*, *M. tristata*, *M. fluctuata*, *Boarmia repandata* (including some very fine black forms), *Eupithecia togata* (including the very dwarf race), *E. extensaria*, *E. sobrinata* and *E. Stevensata*. Mr. Auld, the first known bred British *Callimorpha Hera*, v. *lutescens*, series of *Spilosoma lubricipeda*, with its v. *zatima* and v. *fasciata*, together with a number of intermediate forms; a broad banded *A. plagiata*; and vars. of *Dicycla oo*, *Abraxas urticae* (without dorsal spots), and *Lomaspilis marginata*. Mr. Levett, vars. of *Callimorpha dominula*, bred, from Deal, three of which were the yellow form. Mr. Mera, three vars. of *Arctia Caja*; (1) with inner half of fore-wings almost completely white; (2) with white markings of fore-wings only slightly indicated; (3) white almost covering fore-wings and black on hind-wings much diminished; a *Cidaria silaceata*, pale brown with paler lines, reminding one of *C. reticulata*; *Hadena thalassina* with absence of usual markings and of almost uniform smoky-grey; an *Arctia villica* with smoky hind-wings, and one with black suffused over all the wings; and a *Brenthis (Argynnis) Euphrosyne*, with confluent spots across the centre of both wings. Mr. Turner, the most distinctive forms of *Hibernia leucophearia*, *Gnophos obscuraria* and *Oporabia dilutaria*; a *Canonympha Typhon*, with a series of well developed ocellations and a large white patch on the upper-side of the hind-wing, from Carlisle; and on behalf of Mr. Wilkinson, of Carlisle, a very variable series of *Melitæa Aurinia (artemis)*, including several good aberrations. Mr. H. Moore, Exotic *Orthoptera*, including (1) *Locusta peregrina*, from several localities, showing great variation in density of colour; (2) *Pachytylus migratorius*, v. *cinerascens*; (3) a long series of *Ædipoda fasciata*, from many places, and varying with the soil upon which it rests; and some ten species of American *Ædipodidæ*. Mr. T. W. Hall, conspicuous varieties of the following species:—*Arctia Caja* (one with almost black secondaries); *Spilosoma lubricipeda* (one of v. *zatima*, taken at Wicken); *Sesia culiciformis* (yellow banded); *Polia xanthomista* (v. *statices*); *Demas coryli* (banded); *Mamestra persicaria* (unicolorous black); *Xylina conspicillaris*, and many other species. Mr. Frohawk, his grand series of under-sides of *Enodia (Epinephele) hyperanthus*, varying from extreme v. *Arcte* to the beautiful v. *lanceolata*, and vars. of *Papilio Machaon*, including a very dark tawny form bred from Wicken. Mr. Tutt, his specimens of *Melampias Melampus* and *M. Pharte* upon which he bases his opinion that they are only forms of one species, and his series of the hitherto supposed distinct *Canonympha Iphis* and *C. satyrion*. Mr. Dawson, a dark male of *Dryas (Argynnis) Paphia*,

somewhat approaching *v. valezina* of the female; Shetland forms of *Campogramma bilineata*; a var. *Schmidtii* of *Chrysophanus Phlæas*; and a *Taniocampa incerta* with much intensified transverse lines.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *November 18th, 1896*.—Professor RAPHAEL MELDOLA, F.R.S., President, in the Chair.

Mr. Malcolm Burr, of "Bellagio," East Grinstead, Sussex; Mr. G. H. Gale, of the Public Works Department, Hong Kong; and Mr. A. E. Wileman, of the British Consular Service, Yokohama, Japan; were elected Fellows of the Society.

Mr. Tutt exhibited a series of the ochreous form of *Tephrosia bistortata*, Goetze, known as ab. *abietaria*, Haw., captured by Mr. Mason in March, 1895 and 1896, near Clevedon, Somerset; also a series of the second brood of the same species (ab. *consonaria*, St.), bred from ova laid by the Clevedon specimens. He also exhibited a series of *Tephrosia crepuscularia*, Hb. (*biundularia*, Esp.), taken by Dr. H. Corbett at Doncaster; a peculiar variety of *Hipparchia Semele*, captured by Mr. H. S. Clarke near Ramsey, Isle of Man; also a series of *Plusia bractea* bred from ova laid in July last. The eggs and larvæ have been subjected to forcing treatment, with the result that the moths emerged in October. Mr. Tutt also exhibited a very dark specimen of *Polia chi* ab. *olivacea*, captured at Meldon Park, Morpeth, by Mr. Finlay. Dr. Sharp called attention to Mr. Ernest Green's plates of the *Coccidæ* of Ceylon, which were exhibited on a screen in the room, and said that he was inclined to consider the *Coccidæ* as a distinct order of Insects, but at present the evidence was hardly sufficient to warrant this. He asked Mr. Green if he could give him any information with regard to the development of the wings in the male. Mr. Green said that in the males of the *Coccidæ* the wings first appeared in the penultimate stage as small projections on the sides of the thorax. These wing-pads grew to a certain extent without any further ecdysis. Though the insect was then quite inactive, and took no food during the stage, the rudimentary wings and legs were free from the body, and were capable of some slight movement. After the final ecdysis the wings of the imago were fully expanded, and assumed their natural position before the insect left the sac, or puparium, in which the resting stage had been passed. Mr. McLachlan and others continued the discussion. Mr. Bethune-Baker exhibited a yellow spider from Orotava, which was of the exact colour of the flowers it usually rested upon, and which had been observed to catch *Vanessa* which settled on these flowers. Mr. Barrett said he had noticed a spider with the same habit on the Ox-Eye Daisy in Surrey. Mr. Bethune-Baker also exhibited a very curious dark variety of *Arctia Caja*, bred by Mr. Moore. Professor Meldola stated that it had been of late found difficult to store bristles in the City owing to the ravages of a moth, of which he exhibited living specimens of the larvæ and pupæ. Mr. Barrett said that the moth was *Tinea biselliella*. Mr. Blandford stated that the bisulphide of carbon treatment might be found to be of advantage if it were practicable, but more would have to be ascertained with regard to the extent and character of the ravages before anything could be determined upon. Mr. Merrifield, Mr. Green, and others took part in the discussion which followed. Mr. Blandford called attention to the use of formalin as a preventive of mould, and said that it would probably be found of use in insect collections; an object once sprayed with this substance never became mouldy afterwards. Professor

Meldola said that formalin was another name for a solution of formic aldehyde: it is now used in the colour industry, and is, therefore, produced on a large scale. Mr. Newstead communicated a paper, entitled, "New *Coccidæ* collected by the Rev. A. E. Eaton in Algeria."—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

December 2nd, 1896.—DR. DAVID SHARP, M.A., F.R.S., Vice-President, in the Chair.

Dr. Sharp exhibited the series of Longicorn *Coleoptera* of the genus *Plagithmysus* from the Hawaiian Islands, of which a preliminary account had recently been given by him elsewhere. He said that these examples were the result of Mr. Perkins' work for the Sandwich Island Committee, and afforded a fair sample of his success in the other Orders, which would be found to have completely revolutionized our knowledge of the entomological fauna of these islands. He stated that Mr. Meyrick had recently informed him that the *Geometridæ* would be increased from six species to forty-four, and that the genus *Plagithmysus* showed an almost equal increase; and that the working out of the specimens was very difficult, owing to the variability of the species and to their being closely allied. Mr. Malcolm Burr exhibited a specimen of a cockroach, *Pycnoscelus indicus*, Fabr., taken in a house at Bognor, Sussex. He said this was the first record of the occurrence of the species in England. According to De Saussure, it was distributed throughout India, Ceylon, Mexico, and the United States. Mr. P. Crowley, a remarkable variety of *Abraxas grossulariata* taken in a garden at Croydon last summer. Mr. Tutt, some *Micro-Lepidoptera* from the Dauphiné Alps. Several specimens of *Psecadia pusiella*, Röm., showing considerable difference in the width of the black zigzag band crossing the centre of the fore-wings longitudinally. The species was taken at La Grave, in a gully at the back of the village. A large number of specimens were secured, chiefly resting on the trunks and branches of two or three ash and willow trees growing on the bank at the side of the gully. A few specimens, however, were obtained drying their wings on the grass on the bank, but Mr. Tutt stated that he failed to find pupa-cases. The captures were all made on the mornings of August 7th and 8th. In spite of the striking conspicuousness of the insect when set out for the cabinet, it was by no means easy to detect at first on the tree trunks. Mr. Tutt also exhibited specimens of a "plume" which had been named *Leioptilus (Alucita) scarodactyla*. It was exceedingly abundant on the *Artemisia* growing on the roadside just below La Grave. There could be little doubt, he thought, from the habits of the insect, that the *Artemisia* had been its food-plant. He also exhibited specimens, from Le Lautaret, of *Sericoris rivulana*, *Gelechia spuriella*, *Sophronia semicostella*, *Pleurota pyropella*, *Ceophora stipellus*, and *Butalis fallacella*. The latter were chiefly interesting from the fact that they were taken at an elevation of about 8,000 feet. Lord Walsingham made some remarks on the specimens. Lord Walsingham read a paper, entitled, "Western Equatorial African *Micro-Lepidoptera*." A discussion ensued, in which Dr. Sharp, Herr Jacoby, and others, took part.—H. Goss, *Hon. Secretary*.

COMMITTEE OF THE ENTOMOLOGICAL SOCIETY OF LONDON FOR THE PROTECTION OF BRITISH LEPIDOPTERA.—At a Meeting held on November 25th, it was resolved to invite the co-operation of local Societies throughout the United Kingdom, and to ask them to furnish information as to proceedings likely to cause the extermination of local species of *Lepidoptera*. Communications will be received by the Hon. Secretary.—CHAS. G. BABBETT, 39, Linden Grove, Nunhead, S.E.

OCCURRENCE IN IRELAND OF *PLATYPTILIA TESSERADACTYLA*,
L., = *FISCHERI*, ZELL.

BY C. G. BARRETT, F. E. S.

Among some *Micro-Lepidoptera* recently forwarded for examination from Ireland by Mr. W. F. de Vismes Kane, I found a single specimen of a small "Plume" not recognisable as a British species, but approaching more closely to *Platyptilia tesseradactyla* than to any other known to me, yet differing somewhat in colour from Swiss examples of that species. At my request Mr. Kane promptly sent several more specimens, with the following remarks:—"They were taken by myself and the Hon. R. E. Dillon in the first week of June, 1895, at Clonbrock, flying in the sunshine to the flowers of a species of *Gnaphalium* on a dry bank alongside of a bog. Mr. Dillon had taken a series of them in a previous year, but I could not name them, and fancied that they must be *Zetterstedtii*. They have been in a store box since awaiting identification, and I therefore included a specimen for your opinion. I may mention that I subsequently took a single specimen on June 11th in the same year in another Galway locality. They are fairly plentiful in the restricted area where we found them at Clonbrock, but I should think could be easily exterminated there if worked for persistently. The other little whitish plume (*Acipitilia tetradactyla*) was also flying in the same spot."

About these specimens there can be no doubt. They, like the first, are whiter than Continental specimens, with the dark markings grey rather than brown, but otherwise having every character of *P. tesseradactyla*.

It bears some resemblance to *Platyptilia gonodactyla* (*trigonodactylus*), but is less than one-half its size, being in fact decidedly smaller than the occasional dwarf second brood specimens of that species. Fore-wings narrow at the base, but rather suddenly broadened behind and shortly angulated at the apex, so as to present a rather stumpy appearance; pale grey-brown dusted with white, and having two oblique, white, transverse stripes toward the hind margin, one of them crossing the base of the fissure, and the other crossing both lobes; immediately before the first of these is the usual dark costal triangle, of a dark grey-brown; preceding this, in the middle of the costal margin, is a small dark cloudy spot, a pair of similar spots lies on the dorsal margin before the middle and a pair of minute dark dots at the base of the fissure; cilia sharply white. Hind-wings dark fuscous with a golden gloss; cilia smoky-brown, except at the tip of each lobe, where is, in each case, a dash of pale yellow, on the dorsal side halfway down the third lobe is a darker fuscous tuft in the cilia. Antennæ pale brown, barred with white; head and front of thorax pale umbreous, hinder part of thorax white; abdomen whitish-brown; legs whitish, the tibiae of the hinder pair having a brownish cloudy dash before each pair of spurs.

Of its larva Sorhagen says, "It lives till the winter in the pith of the flower stem of *Gnaphalium dioicum* and *G. arenarium*, also of *Antennaria dioica*. In the spring it feeds in the larger young shoots, pupating in the larval habitation." Dr. E. Hofmann says, "Larva on *Antennaria dioica* in May, imago in June."

Frey, under the name of *Fischeri*, says of the distribution of this species, "In the south in Tuscany, in the north in Livonia and Finland, widely distributed, found also in Bohemia, Silesia, Austria, and Switzerland, both in the valleys and on mountains as high as 6000 feet. In the mountain regions on the wing at the end of July and in August."

Gnaphalium dioicum and *arenarium* do not appear to be known as British plants, but we have closely allied species in the same genus, and considering the wide distribution of this species, which Wocke gives as "Northern Europe, France, Germany, Switzerland, Italy and Persia," it is somewhat remarkable that it is not known as an inhabitant of Great Britain, and our friends in Ireland are to be congratulated upon having added so interesting and distinct a species to the fauna of the United Kingdom. As already hinted, Swiss specimens have a decidedly browner, warmer tinge of colour than those now recorded.

39, Linden Grove, Nundead, S.E.:

January 7th, 1897.

DESCRIPTIONS OF THE LARVA AND PUPA OF *DEPRESSARIA PULCHERRIMELLA*, STN.

BY EUSTACE B. BANKES, M.A., F.E.S.

Although the larva of *Depressaria pulcherrimella*, of which species the imago was first described by Stainton in Trans. Ent. Soc. Lond., v, 164-5 (1849), has now been known for the last forty years and more, I am not aware that a description of it, or the pupa, has ever been published in any English or continental work; it may, therefore, be useful to supply the omission.

LARVA.

The following description was taken on May 31st, 1896, from a larva, almost full fed, found near here on the preceding day.

Length, 13 mm. Greatest breadth, 1.8 mm.

Head rather narrower than the prothoracic segment, polished, pale whitish-yellow tinged with green, with some scattered brownish bristles; upper mouth-parts brownish; ocelli consisting of five small, round, polished, black dots, placed in a

semicircle, on each side of the head. *Prothoracic segment* decidedly narrower than the succeeding ones, with a slightly polished pale yellowish-green undivided plate, on which are several minute black polished dots emitting brownish bristles. *Thoracic segments* and *abdomen* together of the usual *Depressaria* shape, of fairly uniform width in the middle and tapering thence towards both extremities, somewhat semitransparent pale yellowish-green; the dorsal vessel shows distinctly as a dark green central line through the entire length from behind the prothoracic segment, and on either side of it is a broad but ill-defined rather dark green subdorsal line; skin smooth, rather glossy. *Warts* and *spiracles* polished, black, emitting brownish bristles. *Anal plate* inconspicuous, slightly polished, greenish-yellow; its surface is remarkably uneven with several black polished raised spots, emitting brown bristles, standing on distinct mound-like prominences. *Ventral surface* pale yellowish-green with some minute black polished warts. *Legs* semitransparent, yellowish watery white. *Prolegs* semitransparent, watery-white.

I have as yet only found the larva living in a slight silken web among, and feeding on, *flowers* and *young seeds* of *Conopodium denudatum*, Koch (= *Bunium flexuosum*, With.), from flowers of which it was bred years ago by Dr. Colquhoun (Ent. Ann., 1856, p. 51; 1858, p. 106). It also feeds on other plants, and sometimes adopts different habits, for von Heinemann bred the imagines, which were duly identified by Stainton (Ent. Ann., 1870, p. 8), from larvæ found by himself in rolled-up *radical leaves* of *Pimpinella saxifraga*, as recorded in Schmet. Deutsch. u. d. Schweiz, iii, 181, where he adds that, according to Schmidt, it feeds on *Valeriana officinalis*. Besides the above, Sorhagen (Kleinschmet. d. M. Brandenburg, 329) mentions *Cnidium venosum* and *Daucus*, but does not give his authorities for these food-plants, and both he and Meyrick (HB. Br. Lp., 629) speak as though the invariable habit of the larva is to live in rolled leaves, which is certainly not the case.

PUPA.

The pupa was thus described on June 8th, 1896, after it had been in that state only a few days:—

Length, 7 mm. *Greatest breadth*, 2·6 mm.

Very broad anteriorly, gradually tapering posteriorly, flattened dorsally. *Skin* smooth and highly polished; hairs and bristles pale and inconspicuous. *Eyes* showing through as indistinct dark spots. *Antennal cases* lying between, and of equal length with, the wing-cases. *Head* and *prothoracic segment* dingy reddish-orange. *Meso- and meta-thoracic segments* dingy greenish-orange. *Wing-cases* reaching to the end of the fourth abdominal segment, dingy greenish-orange, as are also the limb-cases. *Abdomen* dorsally dingy orange slightly tinged with green; on its second and following segments is a green dorsal line, becoming less distinct posteriorly; segmental divisions clearly defined; anal segment orange-red, armed with some orange-coloured hooked bristles. *Ventral surface* to end of wing-cases dingy greenish-

orange, posteriorly dingy orange tinged with green. In the specimen under notice, which proved to be a female, the only "free" segments were the fifth and sixth abdominal ones.

The pupa was enclosed in a slight white silk cocoon in a flower-head of *Conopodium denudatum*, but apparently such a site is rarely, if ever, chosen in nature, for although I have repeatedly found flower-heads recently tenanted by larvæ, it has never been my good fortune to come across the pupa. The imago appeared on June 18th, 1896.

The Rectory, Corfe Castle :
January 8th, 1897.

CÆNONYMPHA TIPHON AND ITS VARIETIES.

BY KENNETH J. MORTON, F.E.S.

In these days when the number of species of our British butterflies is apparently shrinking, it seems rather paradoxical to say the list of them is growing longer. The increase is due to the giving of names to so-called "aberrations," in many cases based on characters so trivial that the only conclusion one can come to is that their authors have been bitten by what, I think, the late Dr. Dohrn used to call the "Mihi-hund."

For instance, Mr. Tutt, in a recently published book on British butterflies, gives a diagnosis of a *n. ab.* of the var. *Laidion* of *Cænonympha Tiphon*, Rott., to which he applies the name *obsoleta*, but the differences between this diagnosis and that given of the var. are hardly worthy of consideration. The var. *Laidion* (using the name to designate what Mr. Barrett calls the mountain form of *C. Tiphon*, of which form there are before me extensive series from Rannoch, Breadalbane, and the Rothiemurchus district) has a *facies* of its own quite apart from ocellation. In the latter respect there is a perfect gradation of forms ranging from those in which no trace exists of ocellated spots to others in whose hind-wings are six eye-spots with white pupils. I take it the name *laidion* was originally applied to an *aberration* of the typical form (*Tiphon*), in which the eye-spots had reached the vanishing point. In applying the name to a race, the types of the race must be held to be those examples with practically no spots, and it would therefore have been more logical (although quite unnecessary) to apply a name to the other extreme.

Mr. Tutt justifies the application of such names on the ground that they serve to mark the extreme of variation in a certain direction. But this is exactly what the name *obsoleta* in the present case does

not do, for reading Mr. Tutt's diagnosis as it must be read, very exactly, to be of any meaning, the aberration has a trace of a spot in the hind-wings. His extreme, therefore, is not the real extreme, for the spot may quite disappear.

The application of names in such cases appears to me perfectly futile. And it would be endless, because there are other points which would equally demand recognition (*e. g.*, the dwindling and disappearance of the pale transverse bar on the under-side of the fore-wings).

Mr. Tutt makes a mistake in connection with the distribution of *C. Tiphon*, through his rendering Staudinger's geographical reference "*septentrionalis*" as "southern." The Continental range is Northern and Central Europe, not Southern and Central Europe as stated.

Turning for a moment to *Erebia aethiops*, the aberration *obsoleta* is found again to the front. The form is no doubt so named because it is supposed to represent the extreme of reduced ocellation, but, if so, it again falls short of the mark. The figure shows *obsoleta* to have at least two very well marked eye-spots with pupils, but an example has occurred in which eyes-pots are obsolete and only traces of the pupils remain. I think the superlative of *obsoleta* would furnish a very good name for this remarkable individual, but I should not care to apply it lest something more extreme should turn up.

Uddingston, N.B. : October, 1896.

ON THE TERMINOLOGY OF THE SCALE-LIKE ORGANS WHICH LIE BETWEEN THE ROOTS OF THE WINGS AND THE SCUTELLUM OF DIPTERA.

BY R. H. MEADE.

Baron C. R. Osten Sacken has lately published an interesting little paper* upon these small lobes or scales which are very conspicuous in the higher *Muscidae*. They have received very different names from different entomologists. The term *alula* or winglets has been most frequently used by those in Britain, as Westwood, Walker, &c., but it is incorrect, for they have no real alliance with the wings; the halteres or poisers being considered as the representatives of the second pair of wings of the *Hymenoptera*, &c. The name *alula* has also been applied by Löw and others to the axillary lobe of the wing, sometimes called *lobulus* (Afterlappen or Flügellappen, Schiner), which is a more correct application of the term.

These scale-like flat processes are usually named *Schüppchen* by

* Berliner Entom. Zeitschrift, Bd. xli, Jahrg., 1896, Heft 1, 285.

the German Dipterists, *cuillerons* by the French, and *squamæ* by the Swedish. Robineau Desvoidy divided the *Muscidæ* into two great divisions by the difference in size (the presence or comparative absence) of these organs, naming them *calypteratæ* and *acalypteratæ* from the Greek word *Kalupteer*, a cover. These divisional terms have been generally adopted; why, then, have the names ceased to be applied to the organs themselves? R. Desvoidy used the term *calyptra* sometimes, but he abandoned it for the rather curious one of *cuilleron*, or bowl of a spoon. Haliday used the name *calyptra* in some of his publications, but the only author who has adopted it altogether is Rondani. It seems to me to possess a claim over all the others, especially when applied to the *Muscidæ*.

The two scales constituting these organs are in some respect independent of each other, the larger one being attached to the scutellum, and lying behind or rather beneath the other, while the smaller one is connected with the wing, and moves with it independently of the other. Osten Sacken would, therefore, give the two scales different names, calling the lower and larger one the *tegula*, as it covers the poiser, and the smaller one *antitegula*. The term *tegula* has exactly the same meaning as *calyptrum*, only one is derived from Greek and the other is Latin, and has no advantage over it. I think, therefore, that we are bound to call these scales *calyptra*, as that name has the claim of priority, and is especially applicable to the calypterated *Muscidæ*.

Bradford: December, 1896.

ON THE BIOLOGY OF *CAMAROTA FLAVITARSIS*, M^{RIC}.

BY DR. PAUL MARCHAL.

In the No. of this Magazine for November, 1896, there is an interesting note by Baron C. R. Osten Sacken "On *Camarota* as a noxious insect." I would remark that I have already given the biology of *Camarota flavitarsis* in my note "Sur les Diptères nuisibles aux céréales observés à la Station Entomologique de Paris en 1894" (C. R. Acad. d. Sci., Paris, Sept. 10th, 1894). Rondani only observed the adult flies, which were mixed with *Chlorops* reared from wheat; he says nothing of the earlier history of the insects.

The stems of wheat attacked by *Camarota* are arrested in their growth, and do not attain more than 30 cm. in height, the ear not being developed. The maggot, observed on June 15th, attacks the terminal portion of the stem; it destroys the axis lengthwise, beginning from

the upper part, and leaving behind it separated brown fibres. When it meets with the uppermost knot, or before meeting with it, it undergoes its change to pupa, which turns upward, so that the fly which will escape from the cephalic extremity may find an exit. I have found as many as four or five pupæ in the same terminal stem, some lying in its axis, but most of them placed in the sheaths of the leaves. When the perfect insect emerges, and before it has expanded its wings, it creeps between the sheaths, in order to escape at the superior extremity. It sometimes happens, therefore, that the sheaths, being contracted by drying, press close against the axis, and all means of exit being prevented, the insect perishes without being able to escape.

The maggot is distinguished from that of *Chlorops* by the two large stigmal prominences at its posterior extremity, which, seen from above, have a very characteristic form, reminding one of a hatchet. The pupa presents the same characters, and at its anterior extremity are two little cephalic horns furnished with several nodosities nearly as in *Oscinia*.

The wheat stems from which I reared *Cumarota flavitarsis* during 1894 came from the Départements of Haute Garonne and Tarn. They also furnished a pretty large number of another interesting fly, *Elachiptera cornuta*, Meig.

Paris: December 30th, 1896.

HINTS ON COLLECTING ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F.L.S.

It has been suggested to me that a few remarks on the above subject would be of interest to some of the readers of this Magazine, and therefore I will try and give some of my own experiences in the matter and hope they may possibly be useful to others. It is eminently a healthy occupation, as it is on fine, sunshiny days in spring, summer and autumn that the best results are to be obtained; dull, hot days in summer and early autumn are not to be despised, but dull days in early spring and late autumn are practically useless, and of course wet ones are so at any time. The Aculeates seem to have a very keen perception of the atmospheric conditions, as I have occasionally observed that on apparently fine mornings there are scarcely any *Hymenoptera* about, and that when this is so, clouds usually come up rapidly and the day is useless for the purposes of collecting these insects. Aculeates are not early risers, nor do they

stay out late; in early spring they will not appear in this country as a rule (*i. e.*, with the exception of Hive and Humble Bees), before about 10 a.m., nor will they be found, with the exception of a few stragglers, much after 3 p.m. In high summer they are sometimes about as early as 8 a.m. and stay out till 5 or 6 or sometimes even later. For collecting purposes the morning hours and mid-day in spring are by far the best; in hot summer the morning and later afternoon (*i. e.*, after 3 p.m.). The hours from 12 to 3 in very hot weather I have generally found most unproductive. It is probable that most of our solitary spring bees attain the imago state and are ready to emerge in the late autumn or early winter of the preceding year, as on several occasions specimens have been dug up in this state at these seasons. They therefore only await suitable weather to appear; it is, however, rarely that any are met with at large before the middle of March. Hymenopterists have, therefore, the whole of the winter to arrange and study their captures and need not trouble themselves to re-commence collecting till the weather becomes inviting. Of course, ardent collectors can dig in banks in winter or collect perforated bramble stems during their walks, on which I shall have more to say later on, otherwise it may be taken for granted that if the weather is unpleasant by cold or damp, it is not worth while to go out collecting.

The apparatus necessary is very simple—a wide mouthed bottle with a tube through the cork, such as those used for *Coleoptera*, and a net are the only needful impedimenta. The bottle should have a lump of cyanide at the bottom, well wedged down with blotting paper, over which a piece of white note paper may be placed with advantage, the object being to prevent the possibility of any dampness getting to the insects; it is well, therefore, to arrange the white paper so that it comes well up the sides of the bottle in the form of an inverted cone, taking care to widen out the apex of the cone so as to allow plenty of room for the specimens. It is wonderful how many such a bottle will hold, and also what apparently large insects will go down the tube; humble bees, for instance, which, on account of their hairy coats, often look much too large, will be found to go down easily when invited to do so. Some entomologists prefer to wrap up the cyanide in paper and to fill the rest of the bottle with loosely crumpled pieces of tissue paper, the object being to prevent the specimens from dying in a heap and possibly damaging each other. If the use of cyanide be objected to, bruised laurel leaves will answer the purpose, the only difficulty being to keep the bottle dry, and dryness is an

essential, as the least wet tends to curl the wings up at the end and to mat the hairs of the body. The objection to cyanide in the eyes of many collectors is that it renders the specimens very rigid; they can, however, be relaxed by placing them in a laurel bottle afterwards, but personally, as I do not set my specimens, this rigidity does not cause me any inconvenience. Another inconvenience of cyanide is that in some cases the yellow colour of insects will be turned red if left in the bottle too long; if, therefore, the captures cannot be set the same day, they should not be left in the bottle over night, at any rate, if there are any brightly coloured specimens amongst them.

The other necessary to the collector is a net. This, to my mind, should be as small as possible; the one I use myself is on a ring of about 8 inches diameter, and is made of the very finest white net obtainable, 22 meshes to the inch will be fine enough to hold any of the aculeates. The net should not be too long, about once and a half the length of the diameter of the ring is a convenient length, and the end of it should be kept as widely rounded as possible, as a pointed net is often very inconvenient; the best sort of ring I believe to be a diminutive, steel, landing-net ring, which will fold up, with a "universal" screw, this screw (which is known throughout the fishing world) and ferrules to fit it can be obtained in most of our towns. The stick is the next important thing and should, I think, be light and short; two feet long is quite enough for ordinary purposes, and for quick work shortness is indispensable, and although at times a longer one may be useful, the inconvenience of carrying about and changing the sticks is such that it is probably scarcely worth while to do so. Pocket sticks can be obtained made on a telescopic principle, which I have found especially handy and useful.

Equipped with a net and a killing bottle a collector is prepared to go out and try his luck. In early spring he will find the catkins of the willows (*i. e.*, the short catkin species of *Salix*) offer the most attractions to the *Hymenoptera*; these plants, on bright, sunshiny mornings, often seeming alive with insects. The difficulties of the entomologist now begin; there are probably dozens of Hive Bees, many flies, and a few *Andrenas*, some of which latter may be rare, and it is often no easy matter to tell them apart; a hive bee, a large ♀ *Andrena*, such as *rosæ*, *nigroænea* or *tibialis*, and a large *Eristalis* fly are very much alike to an unexperienced eye; by degrees, however, one begins to recognise them by the peculiarities of their flight, &c. A hive bee, when flying, droops its legs and never shows the white pollen of the willow on its tibiae, it also hums; an *Eristalis* is more

rapid and jerky in its flight, turns more suddenly and sits down with less deliberation; a ♀ *Andrena* is silent in its flight, flies steadily, settles down composedly and generally shows a lot of yellowish or whitish pollen on its legs, or, if fresh from the burrow, the yellow hairs of the tibiae in many species will betray them. The ♂ *Andrenas* rarely settle, but fly round the branches, often near the tops, which renders them very difficult to capture; they are much slimmer insects than the females and may generally be known by their almost incessant and steady, though rapid, flight. *Diptera* of the same size are usually sure to settle before long, or to turn suddenly in their flight. Rapidity in flight of course depends greatly on the temperature, on a cold day the insects are far less lively than on a hot one, and it is curious to observe the immediate disappearance of most of the Aculeates the moment a cloud shadows the sallow and their rapid re-appearance when it has passed. The earliest *Andrenas* to appear are probably *Clarkella*, *Gwynana*, *apicata* and *albicans*, but they are rapidly followed by the rest of the spring species, *præcox*, *tibialis*, *minutula*, *nigroænea*, *rosæ*, race *Trimmerana*, *apicata*, *bimaculata*, *thoracica*, *pilipes*, *cineraria*, *nitida*, *fulva*, *helvola*, *varians*, *dorsata*, *Afzeliella*, *fulvicrus*, all these frequent sallows, although some are local and rare; *cineraria*, for instance, though common in some localities, has never occurred, so far as I know, in this neighbourhood, *apicata*, *bimaculata* and *dorsata* are also local species. On the other hand, *Gwynana*, *albicans*, *Trimmerana*, *Clarkella*, *tibialis* and *nigroænea* seem to occur nearly everywhere, at least in the South of England; the males always precede the females a day or two in their appearance. With the *Andrenas* a few *Halicti* are often to be found, and usually a few species of *Nomada*; *borealis* is the first of this genus to appear, being parasitic on *A. Clarkella*, inquilines are, however, found in greater numbers round the burrows of the *Andrenas*, but these burrows are not always easily found, when, however, they can be discovered, the collector will learn more by watching the banks where they occur than by collecting the insects off their food-plants, for there he will find both sexes flying about together, their inquilines and other parasites which belong to them, as well as those miserable individuals which are so distorted by stylopization that they cannot fly any distance; luckily for their race, such specimens are rare, I have, however, met with them on several occasions. Once, on the "Croft" at Hastings, I found a specimen with four of these parasites in it, which could scarcely do more than tumble about, its body being *inflated to nearly twice its usual bulk*. I may here remark that it is

always worth while to secure stylopized individuals, as there are many questions as to the effects of stylopization which have not yet been definitely answered. In cases where the bee is only attacked by one *Stylops* it probably flies about as freely as any unaffected specimen, and the presence of the parasite will only be detected by the yellow seed-like portion which projects between the abdominal segments. In early spring, besides *Salix*, *Veronica chamædrys* is attractive in sheltered lanes to *Andrena minutula* as well as to small *Halicti*. Dandelions also, should always be looked at, as some *Andrenas* and many species of *Halictus* are specially attracted by them. Amongst the earlier bees to put in an appearance is *Anthophora pilipes*, the tawny males and jet black females of which may be seen darting about from flower to flower on sunshiny mornings, looking like diminutive Humble Bees, from which the white spotted face of the male and the yellow tibial scopæ of the female will at a glance distinguish them. After the first rush of spring bees, which lasts to about the end of April in this part of England, there is generally more or less of a pause in the appearance of the Aculeates. The early *Andrenas* are still about, but are so shabby and weather-beaten as to be hardly worth capturing.

(To be continued).

DESCRIPTION OF AN ANOMALOUS HEMIPTEROUS INSECT.

BY DR. D. SHARP, M.A., F.R.S.

Colonel Bingham has kindly given me a Hemipterous insect of a highly anomalous nature, which I believe to belong to *Carcinochelis*, Fieb., a genus which was characterized in 1861, but as no species was assigned to it, has remained a mere name.

CARCINOCHELIS BINGHAMI, n. sp.

Pallide argillaceus, spinosus, antennis etiam fortiter spinosis; scutello perelongato angusto, medio carinato, lateribus spinosis. Long., 6½ mm.

Hab. : Burma (Colonel Bingham).

The specimen is evidently immature, so that the colour and the relative lengths and widths of the more flexible parts cannot be accurately stated. The head is elongate, cylindrical but strongly spinose, the eyes placed far from the thorax, near the front part of the head. The proboscis is short and stout, forming a loop with the head, it is only of two joints, though it appears to be three-jointed owing to the

thick setæ being free at the extremity, these latter are received on a very deep broad depression of the prosternum. Antennæ short, four-jointed, inserted on the top of the head, and contiguous; basal joint long, strongly spinose, 2nd and 3rd joints shorter, also spinose, terminal joint a little dilated, not spinose. Prothorax rather long, much narrowed in front, anterior part densely spinose, posterior part 4-carinate with spines on the ridges, punctate between the ridges. Elytra free from spines, corium small, clavus membranaceous like the large membrane itself, the latter traversed by three or four coarse veins. Scutellum narrow even at the base, where it is of the same width as the space between the middle two thoracic carinæ; it is carinate at the sides and along the middle, the carinæ being spinigerous, the middle one only minutely so, and not at the base; the scutellum extends very nearly to the tip of the body. Connexivum strongly spinose. Mesosternum larger than metasternum, the middle coxæ touching the hind pair, a longitudinal carina between them, a transverse one in front of them. Front legs with long dependent coxæ, small trochanters, thick femora, one side of each of which is produced to form a process, at the base of which the altered tibia is articulated; these two processes are in opposition along their inner margins, which are densely and minutely dentate; thus they have something of the appearance of the claws of crabs or lobsters; but they are curved.

The above characters certainly bring this insect near to *Phymata*, though the form of the head suggests a close relation with *Reduviidæ*; the shape of the head is, however, the only character of much importance by which the insect departs from *Phymata*.

Colonel Bingham met with one specimen on the Pegu Hills in April, 1888. The insect probably uses the front legs like a *Mantis* does.

The genus *Carcinochelis* was proposed by Fieber in 1861 (Europ. Hemip., p. 34), and certain brief generic characters were given in the table of *Phymatidæ*, but no reference was made to any species. In M. Severin's valuable Catalogue général des Hémiptères, iii, p. 29, the genus is given, and as species is mentioned "alutaceus, Fieber (non descriptus), Patria ignota." Under these circumstances it must remain doubtful whether this genus was that intended by Fieber or not: as the character from which he derived the name applies to Colonel Bingham's insect, I have thought it better to adopt the generic name, but the minor part of the appellation I have preferred to disregard altogether. I have great doubt whether it is proper to adopt even the generic name; for it appears to me to be a very improper proceeding to characterize a genus without any species for it; so that I hope the course I have adopted will not be considered as evidence that I think that a generic name proposed without any species has claim to priority.

Cambridge: December 28th, 1896.

AN ATTEMPT TO ELUCIDATE AND TO FIX THE TYPES OF
TORTRIX, *TINEA* AND *ALUCITA*,
 THREE OF THE LINNÆAN SUBDIVISIONS OF *PHALÆNA*, L.

BY THE RIGHT HON. LORD WALSLINGHAM, M.A., LL.D., F.R.S.,
 AND
 JOHN HARTLEY DURRANT, F.E.S., MEMB. SOC. ENT. DE FRANCE.

As Professor Grote has recently on more than one occasion confessed his inability to determine the types of these subdivisions, and as one of them seems to be used incorrectly, no apology is necessary for publishing the conclusions arrived at after careful study extending over several years, especially as it is hoped that the results obtained will have the merit of finality, being based on a strict application of the Law of Priority. The elucidation of these Linnæan subdivisions is attended with unusual difficulty, not only on account of the loose and illogical manner in which some of them have been treated by writers subsequent to Linnæus, but also because at the outset we have to face the much debated question whether these subdivisions can be accepted as *genera* attributable to Linnæus himself.

It is usually considered that Linnæus was the originator of that binomial system which is in use at the present day, and so far as the special name is concerned this assumption is certainly correct, but in the *Lepidoptera* (to which all these remarks apply *exclusively*) Linnæus cannot be said to have described a single genus—his assemblages of species under a distinctive heading are of *not less* ordinal value than the groups which are now called Families, and therefore the subdivisions of these heterotypical assemblages more nearly approximate what we now call a genus. From a modern point of view the so-called genera as well as their subdivisions are for the most part of no systematic value, and it is only the fact that these names obtained priority for groups of species whose sole claim to recognition rests in the restrictions made and the definitions applied to them by subsequent writers that renders it necessary to discuss them all.

If we regard the Linnæan names *Papilio*, *Sphinx* and *Phalæna* as genera, then it is obvious that those designations which were used in plural form in subdividing these three large assemblages were not considered as of equal value with the whole group of which they were component parts. Though confining this enquiry to three only of the subdivisions of *Phalæna*, the same arguments apply equally to the other trinomial subdivisions proposed by Linnæus.

It is certain that Linnæus did not consider these subdivisions as genera, for they are not numbered, whereas all the Linnæan *genera*

are numbered consecutively; thus in the *Systema Naturæ* (edn. X), pp. 18-19, we find:—

“MAMMALIA—Generum Characteres compendiosi” (1 *Homo* to 39 *Delphinus*). On pp. 83-85:—“AVIUM—Genera Characteres Avium” (40 *Vultur* to 102 *Caprimulgus*). On p. 196:—“AMPHIBIA—Generum Characteres” (103 *Testudo* to 118 *Acipenser*). On pp. 242-3:—“Characteres Piscium” (119 *Muræna* to 169 *Pegasus*). On pp. 342-4:—“INSECTA” (170 *Scarabæus* to 243 *Julus*).

It will be observed that each of these headings differs in form: in the tabulation of the fishes we have only “Characteres Piscium,” both “PISCES” and “genus” being omitted, and in the Insecta, “Generum characteres insectorum” is left out; but the names in these Orders were regarded as genera is evident from the fact that the numerical sequence is maintained throughout, and moreover, in a footnote to the twelfth edition under the INSECTA we find (p. 537 = †357):—“*Genera Naturalia Auctorum metamorphosi demonstranda vitam scientiæ largiuntur,*” &c. This edition is practically the same as the tenth as regards its classification, but the numbers of the genera are somewhat higher through the introduction of additional genera, *e. g.*, *Scarabæus* is No. 189 (instead of 170), and *Julus* No. 274 (instead of 243).

To each of these *genera* a short diagnosis is appended, and by turning to the table we can see what Linnæus really regarded as *genera* in the *Lepidoptera*.

In the tenth edition, p. 343 (and in the twelfth, p. 538, but numbered 231-3) we find:—

(Order) “III. LEPIDOPTERA.”

(genera) “203 PAPILO—Antennæ extrorsum crassiores. Alæ erectæ.

204 SPHINX—Antennæ medio crassiores.

205 PHALÆNA—Antennæ introrsum crassiores.”

It is therefore evident that Linnæus did not regard either *Bombyx*, *Noctua*, *Geometra*, *Pyralis*, *Tortrix*, *Tinea* or *Alucita* as genera, but employed them as subdivisions or subgenera, and this conclusion is borne out by a footnote on p. 496 of the tenth edition (edn. XII, 809):—“*Phalænæ dividendæ, quo facilius inquirantur,*” &c., and here a brief diagnosis to each of these subdivisions is given.

If it be objected that the names of these subdivisions cannot be accepted as genera until they were so called by a subsequent author, then it follows that the term genus must be applied to the groups which we now call *Rhopalocera* and *Heterocera*, and that *Papilio* and *Phalæna* must be used in lieu of these names. It is obvious that in the *Lepidoptera* the term “genus” is not now used in the sense in

which it was applied by Linnæus, but are we to waste our time in argument about the meaning of the word "genus" and to endeavour to restore this term to the sense in which it was used by Linnæus, or are we to strive to bring the work of the author of the *Systema Naturæ* into line with modern thought and methods? Linnæus himself perceived the necessity for subdividing his so-called genera, and we shall not be wrong in following his lead. The names *Papilio* and *Phalæna* should be altered in termination in accordance with the value they are held to possess (but should be attributed to Linnæus), and should be substituted for *Rhopalocera* and *Heterocera* which they antedate, on the other hand the subdivisions of these Linnæan genera should be attributed to Linnæus as "genera" in the modern acceptance of the term.

TORTRIX, L.

Type—*Tortrix viridana*, L. (Stph., 1829).

TORTRICES, L., Syst. Nat., X, 496, 530 (1758).

The original definition as given on p. 496 is:—"Alis obtusissimis ut fere retusis, planiusculis," to which the following restriction is added on p. 530:—"Tortricum Larvæ contorquent & filo connectunt folia, quævorant & intra quæ se recipiunt."

The type of *Tortrix*, L., must be one of the species enumerated by Linnæus (Nos. 202 to 225), and it must conform to the original definition and to the restriction based on the habits of the larvæ that were then known. The subsequent writings of Linnæus did not affect the type of this genus.

Poda, Ins. Mus. Græc., 93 (1761), enumerated two species as belonging to *Tortrix*, of these *prasina*, Poda, = *quercana*, Schiff. (*bicolorana*, Fuessl.), and the other, *avellana*, Poda, is considered to represent *corylana*, F., both non-Linnæan species, consequently the type was not affected.

[Geoffroy entirely omits reference to *Tortrix*, L., and Fabricius in 1775, by an error of judgment, transferred the Linnæan name *Pyrallis* to the group which Linnæus had designated *Tortrix*, raising it to generic rank and enumerating nearly all the species known to Linnæus, but in his writings he did not indicate the type of his genus. Lamarck, Syst. An. sans Vert., 287 (1801), re-described *Pyrallis*, F. (*nec* L.), and cited *viridana*, L., as the type].

Toerner, Diss. Ac. Upsal., III, 259 (1801), raised *Tortrix* to generic rank under its own name, and re-described it thus:—"TORTRIX: antennæ filiformes. Alæ ampliatae, obtusæ: margine exteriori curvo," but mentions no types. [N.B.—It is stated that Thunberg was really the author of these "Dissertationes."]

Haworth, Prod. Lp. Br., 15 (1802), removed *prasinana*, L. (= *fagina*, Hw.) to "Noctuæ viridæ," a very proper correction of a Linnæan error, unfortunately, however, Lp. Br., 394-6 (1812), he replaced it in *Tortrix*, but his previous restriction, which was justified, must be held to exclude this species from being a possible type of the genus.

Leach, Edinb. Encycl., 135 (1815), quotes *prasinana*, L. (= *fagina*, Lch.), as the type of *Tortrix*, but this species cannot be accepted as the type, for it does not conform to Linnæus' description of the habits of the larvæ of the genus, and it had been excluded by Haworth in 1802.

Frölich, Enum. Tortr. Würt., 9-11 (1828), and Treitschke, Schm. Eur., VII, 228-30 (1829): VIII, 45 (1830), do not affect the type, but Stephens, Cat. Br. Ins., II, 168 (1829), enumerates only one of the species included in the genus by Linnæus, which fixes the type as *viridana*, L., and in Ill. Br. Ent. Haust., IV, 66, 68 (1834), Stephens gives reasons for considering this species the type. In this he has been followed by all subsequent writers with the exception of Duponchel, who Hist. Nat. Lp. Fr., IX, 19 (1834), erroneously cited *cratægana*, Hb., as the type. It will be observed that whether we study this genus under its original Linnæan name or under that of *Pyralis*, F. (*nec* L.), the results are the same, *viridana*, L., is the type, and as it is an eminently typical species about which there has never existed any doubt, it is to be hoped that it will be impossible to assail its claims to be regarded as the type of *Tortrix*, L.

TINEA, L.

Type—*Tinea pellionella*, L. (F., 1775).

TINEÆ, L., Syst. Nat., X, 496 (1758).

"Alis convolutis fere in cylindrum, fronte prominula." On p. 497 it is remarked that the "Tineis subcutaneis" have only fourteen feet, but this is a mere note on the structural characteristics of a certain section of *Tinea*, L., and in no way affects the question of type.

In the Fauna Suecica, II (1761), Linnæus omits *Phalæna Tinea bella*, L., which therefore ceases to be a possible type, and in the same year Poda, Ins. Mus. Græc., 94 (1761), enumerated two only of the species placed in *Tinea* by Linnæus, *granella*, L., and *pellionella*, L. Linnæus, Mus. Lud. Ulr., 399 (1764), mentions only *Phalæna Tinea bella*, L., but his previous action and that of Poda prevent this species from being accepted as the type.

Poda's restriction (by elimination) of the generic name *Tinea* to the rough headed clothes' moths has been accepted by all subsequent authors. Both *granella*, L., and *pellionella* are quoted by Geoffroy, Hist. abrégé Ins. Paris, II (1762), but Fabricius, Syst. Ent., 655, 667 (1775), subdivided *Tinea*, L., into *Tinea* (L.), F., and *Alucita*, F. (*nec* L.), and while retaining *pellionella* in *Tinea* removed *granella* to his new genus, to which by an error of judgment he applied the Linnæan name *Alucita*. By this action PELLIONELLA, L., was constituted the type of the genus *Tinea*, and it was cited as such by Lamarck, Syst. An. sans Vert., 288 (1801).

There appears to be no reason for objecting to the acceptance of this species as the type, and if Linnæus' expression, "fronte prominula" were used in the *modern* sense it might be taken that he himself indicated that the true *Tineæ* with rough heads constituted the typical portion of his genus; it is possible, however, that he intended to refer to the projecting palpi of some of the species which he included, but as his expression is ambiguous, we are bound to accept the limitations of our predecessors, whose action restricted his assemblage of heterotypical species to that generic conception which we now know as *Tinea*, L.

ALUCITA, L.

Type—*Alucita pentadactyla*, L. (Poda, 1761).

ALUCITÆ, L., Syst. Nat., X, 496 (1758).

"Alis digitatis fissis ad basin." Poda, Ins. Mus. Græc., 94, pl. II, 14 (1761), enumerated and figured one species only of the possible types of this genus PENTADACTYLA, L., which action, three years after the publication of the name, definitely fixed the type of the genus.

Geoffroy, Hist. abrégé Ins. Paris, II, 24-5, 90-3 (1762), created the genus *Pterophorus* at the expense of *Alucita*, and placed the following species in his new genus: 1, *pentadactyla*, L.; 2, *monodactyla*, L. (= *didactyla*, Geoffr.); 3, *hexadactyla*, L.

Fabricius, Syst. Ent., 671 (1775), adopted Geoffroy's name, including Geoffroy's three types, but adding more species.

Lamarck, Syst. An. sans Vert., 288 (1801), re-described *Pterophorus*, citing as its type *pentadactylus*, L., F., &c., but this action was not admissible, this species having already been constituted the type of *Alucita*, L.

Latreille, Préc. Gen. Ins., 148 (1796), created the genus *Orneodes*, omitting to cite the type; subsequently, however, Hist. Nat. Crust. Ins., III, 418 (1802): XIV, 258 (1805), this omission was remedied,

and *hexadactylus*, L. (F., Geoffr., &c.), was cited as the type. By this action and Poda's the genus *Pterophorus*, Geoffr., became monotypical with the type *MONODACTYLUS*, L.

For many years the name *Alucita* has been wrongly used for *hexadactyla*, the work of Latreille having been overlooked or ignored, but Meyrick has very properly re-instated *Orneodes*, Ltr., for this species.

Wallengren, Kongl. Vet. Ak. Handl., III (7), 20 (1859), cited *monodactylus*, L., as the type of "*Pterophorus* (Geoffr.), auct.;" this appears to be a lucky accident rather than the result of conclusions founded on historic research.

Meyrick, Tr. Ent. Soc. Lond., 1890, 487, employs *Alucita* for *monodactylus* and *Pterophorus* for *pentadactylus*, but it appears now that such usage is incorrect.

The synonymy of the genera discussed under this heading should be corrected thus:—

PTEROPHORIDÆ.

ALUCITA, L.

Type—*Alucita pentadactylus*, L. (Poda, 1761).

ALUCITA, L. (1758), = *ACIPTILIA*, Hb. (1826), *dormant*, = *ACIPTILUS*, Z. (1841), = **PTEROPHORUS* (Geoffr.), Meyr.

PTEROPHORUS, Geoffr.

Type—*Alucita monodactyla*, L. (Ltr., 1805).

PTEROPHORUS, Geoffr. (1762), Wlgrn., = †*OIDÆMATOPHORUS*, Wlgrn. (1859), = §*LEIOPTILUS*, Wlgrn. (1859), = ‡*OEDEMATOPHORUS*, Wlgrn. (1875), *dormant*, = **ALUCITA* (L.), Meyr.

ORNEODIDÆ, Meyr.

= *ALUCITIDÆ*, auct.

ORNEODES, Ltr.

Type—*Alucita hexadactyla*, L. (Ltr., 1802).

ORNEODES, Ltr. (1796, 1802), = *RIPIDOPHORA*, Hb. (1805), *dormant*, = *EUCHIRADIA*, Hb. (1826), *dormant*, = **ALUCITA* (L.), Z., auct.

It is satisfactory to be able to limit *Pterophorus* to *monodactyla*, failing which possible acceptance the name would have sunk as a synonym of *Alucita*, L., and the use of the well-known names *Pterophorus* and *Pterophoridae* would have been lost in synonymy.

The names noted as "dormant" are capable of future employment should a genus be required for any of their possible types.

Merton Hall, Thetford:
January, 1897.

Aporia cratagi in Kent.—In view of recent discussions with regard to the increasing scarcity of this butterfly in Great Britain, it may be of interest to your readers to know that I have received a letter from an entomologist (Mr. T. B. Kingsford) now in Canada, but till recently resident in Kent, in which he tells me that in the season of 1893 he met with *Aporia cratagi* so freely that he could have taken twenty or thirty specimens in a single day. Mr. Kingsford describes to me the exact locality in which he found the butterfly; but this, for obvious reasons, I suppress.—THEODORE WOOD, 23, Brodrick Road, Upper Tooting, S.W.: *January 12th*, 1897.

Variation in Lycena minima.—This species has frequently a vague trace of a *hind marginal* series of compound spots; one, at least, of the spots is usually distinct enough to the unaided eye, and a weak lens will discover traces of more. At first I thought these spots might be peculiar to Scotch examples, but it is evidently a more generally distributed condition, as I find a Brighton specimen received from Mr. Goss has them. This character has no doubt been already noticed, and probably even recorded. I allude to it because I can find no reference to it in any of the British descriptions or figures I can lay my hands on at the moment.—KENNETH J. MORTON, Uddingston, N. B.: *December 21st*, 1896.

Lithocolletis cerasicolella, H.-S., in Kent.—Having found larvæ of the above species in this district, and bred moths from them, it may be of interest to record the fact of its occurrence in the South of England. The mines are to be found tolerably abundant in most woods throughout this part of the county, where the food-plant (*Prunus avium*) occurs. The larvæ, like many others of the genus, are greatly infested with parasites, so that a large number collected often leads to most unsatisfactory results from a Lepidopterist's point of view. It appears strange that this moth should so long have been overlooked in a district so much worked as it was and is by many keenly interested in the *Tineina*.—BENJ. A. BOWER, Lee, Kent: *January 20th*, 1897.

An unrecorded locality for Hesperia lineola, Ochs.—On the 13th of last July, when on a pilgrimage after *Micros* to the saltings by Cliffe Fort, I was struck, whilst walking across the Cliffe Marshes, by the great quantities of some *Hesperia*; these, on examination, proved to be *lineola*, or perhaps it would be more accurate to say, the majority proved to be, as there was a small percentage (about two) of *linea* and *sylvanus*. The season being such an early one it was difficult at this date to obtain fine specimens, though the worn condition might be principally owing to the perfect struggle that was going on for possession of the few flowers yet remaining in bloom. As this butterfly has been taken at Canvey Island and the Isle of Sheppey, it is not surprising to find it in the Cliffe Marshes, the last two localities being very similar, and only separated by the river Medway.—ID.

Remarkable aberrations of Stigmonota dorsana, Fb., and *Dichrorampha Petiverella*, L.—Mr. P. B. Mason's collection contains a most striking aberration of *Stigmonota dorsana*. The ordinary white blotch on the dorsal margin is merely

represented by two round white spots, of which the upper and larger marks the usual position of the apex of the blotch, whilst its base is marked by the lower one which is much smaller and is situated close to the margin itself; the space between them is occupied by the ground-colour. The specimen is a male, and was probably captured near Darlington by the late Mr. J. Sang.

In the collection of the Rev. C. R. Digby I found an example of *Dichrorampha Petiverella*, taken by him at Seale, Surrey, on August 1st, 1894, which exhibits a somewhat parallel form of aberrance to that noticed above. The yellowish blotch on the dorsal margin is replaced by two yellowish spots separated by a band of the ground-colour. The upper spot, representing the apex of the blotch, is circular, while the lower one takes the shape of a semicircle, of which the broad base rests on the dorsal margin.—EUSTACE R. BANKES, The Rectory, Corfe Castle: November 20th, 1896.

Autumnal Coleoptera in the Chatham district.—In October last I met with *Colo viennense*, *Hydnobius punctatissimus* (black and testaceous forms), *Acalles roboris*, and a few fine specimens of both sexes of *Anisotoma cinnamomea*, by sweeping on the chalk hills at Queendown Warren. At that apparently inexhaustible locality, Cobham Park, a fine pair of the rare *Xantholinus glaber* occurred to me in November, in wet rotten wood at the foot of an old ash tree; *Quedius chrysurus* and *Q. scitus*, which I had not seen in the Park for at least twenty years, turned up in the same situation, and *Megaconus inclians* was found for the first time in the district under dead leaves, along with *Choleva nigricans*, *C. fusca*, *C. morio*, &c. *Tetratoma Desmaresti* was taken at Woodstock Park, near Sittingbourne, by sweeping under oak trees at the end of October.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: December 5th, 1896.

Mycetophagus quadripustulatus, Linn.—Amongst a number of beetles recently found by Mr. W. H. Tuck at Bury St. Edmunds, and kindly presented to me, I find an interesting variety of this common species. It has the two reddish-yellow spots on each elytron connected along the middle of the disc by a longitudinal vitta, the posterior spot being large and transverse, and extending to near the suture and outer margin. There are several named varieties of this species (*bipustulatus*, *impustulatus*, and *rusticollis*, Schilsky), but none agreeing with the insect described. Mr. Tuck has also found *M. quadriguttatus* and *M. multipunctatus*, as well as the usual form of *M. quadripustulatus*, at Bury.—G. C. CHAMPION, Horsell, Woking: November 30th, 1896.

Bagous diglyptus, Boh., at Ipswich.—While sweeping some dead reeds in a little ditch that runs parallel with the River Gipping hardly outside the town, on the 24th of April last year, I took a weevil quite unknown to me. Mr. E. A. Newbery, kindly examining it a second time, said he thought it must be the very rare *B. diglyptus*, which I believe has previously been recorded for England only from Burton-on-Trent, and Mr. G. C. Champion has been good enough to confirm Mr. Newbery's provisional identification. I am rather fond of working the marshes at dusk in the spring and autumn for hibernating beetles, and it was so dark when I

swept the *Bagous* that I had to take my net home before I could examine its contents. May not the insect be nocturnal in its habits, and this in some measure account for its rarity? Mine was evidently a hibernated specimen, come up for a breath of genial spring-night air.—CLAUDE MORLEY, Everton House, Ipswich: November 28th, 1896.

Saprinus æneus, F., and *Saprinus immundus*, Gyll.—In the January number of this Magazine Mr. E. A. Newbery expresses a hope that some Coleopterist who has studied the genus *Saprinus* may be able to give some constant character to enable Entomologists to separate these two species. In 1868, according to the Munich Catalogue, the genus consisted of 292 species, and about 110 species have been described since. Herr J. Schmidt is the best and perhaps the only living authority on the genus as a whole, but it may be taken for certain that the characters of nearly all the species are well marked, and that the superficial variations in dorsal sculpture etc., are only misleading to those who do not "look a beetle all over." Mr. Newbery at the time of writing probably had only one species before him, as the insects are not very similar, nor does it require any knowledge of the genus *per se* to see their differences. In Pascoe's list of *Coleoptera*, *S. æneus* stands next to *S. immundus*, but in the European Catalogue there are several intervening species, and the insects are so far unlike that it did not occur to Marseul to compare them together. In the "Monograph" he merely placed them with others in the same section.

Perhaps the two most important characters noted by Marseul are: (1) in *S. immundus* (Mon., p. 408) the prosternal striæ are divergent at both extremities, and in *S. æneus* (pp. 413, 414) the prosternum is narrowed in the middle and the striæ are divergent before and behind; in other words, the keel of the prosternum is wider in *S. immundus* (especially in the median area) than in *S. æneus*, but the striæ are somewhat similarly divergent in both. (2) in *S. immundus* the mesosternal marginal stria is interrupted; in *S. æneus* it is entire. Marseul also gives a sexual character for *S. æneus*, viz., a shallow impression in the metasternum of ♂, which does not exist in *S. immundus*.

These are salient and reliable characters, and there are two others equally so: (3) in *S. æneus* the tarsi are relatively long and slender, and in *S. immundus* they are shorter and more robust. (4) in *S. æneus* the femora are comparatively narrow and the punctuation vague and feeble; in *S. immundus* the femora are broader and distinctly and somewhat densely punctulate. The last two characters are conveniently seen in the intermediate pair of legs, but the tarsi on the anterior pair are the best to examine.

Marseul says that the sutural striæ of *S. æneus* are sometimes entire, sometimes not, p. 414; it is a character of small importance, as the dorsal striæ vary in most of the *Sapriini*.—G. LEWIS, 5, Archer's Road, Southampton: January 2nd, 1897.

Rare Aculeate Hymenoptera.—In a box of Aculeates that I sent to Mr. Saunders to look over were the following four species which he wished me to record:—*Crabro aphidum*—of this very rare insect Mr. Saunders says, he possesses the ♂, but has never seen the ♀; he marks my specimen *aphidum*, ♀, with a query. *Halictus atricornis*—one ♂, Sutton Coldfield, August, 1895. *Passalacus monilicornis*—one

♀, Sutton, July, 1895. *Odynerus levipes*—two, in June, 1893, Wyre Forest; Mr. Saunders says, he does not think it has been taken for years, but Wyre Forest must be a good locality for it, as Mr. Martineau also has taken several there.

Other species perhaps worth noting captured last year are :—*Ponera contracta*—one ♀ of this rare ant in my garden in July. *Crabro tibialis* and *clavipes*—also from Sutton. The following from Bournemouth :—*Formica exsecta*, *Crabro palmipes* and *varius*, *Wesmaeli*, *elongatulus*, *Eumenes coarctata* and nests, one ♀ as late as September 9th, *Halictus leucozonius*, *prasinus*, *leucopus* and *punctatissimus*, *Andrena fuscipes*, *coitana* and *Afzeliella*, *Nomada alboguttata*.—RALPH C. BRADLEY, Sutton Coldfield : January, 1897.

Boreus hiemalis near *Edinburgh*.—I am glad to find that this insect is again being found in Britain, after having been overlooked (there can hardly be any other explanation) for many years. In the "Annals of Scottish Natural History" for January, 1897, Mr. William Evans, F.R.S.E., of Edinburgh, records it from seven or eight localities at the foot of the Pentland Hills in October and November last, and apparently not rare. He says the favourite habitat is an old moss-grown wall or tree-trunk, and the mode of capture is by shaking the moss over paper in the ordinary way.—R. McLACHLAN, Lewisham, London : January 5th, 1897.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY : November 16th, 1896.—Mr. G. T. BETHUNE-BAKER in the Chair.

Mr. W. H. Wilkinson exhibited a collection of insects made in the Madeira and Canary Islands in February, March and April last, and gave an account of his visit to the Islands and of the collection. He visited Funchal (Madeira), Orotava (Teneriffe) and Las Palmas (Grand Canary), Orotava being the best collecting ground. He found *Anosia Plexippus* and *A. Chrysippus* very plentifully, especially the former, in Grand Canary; *Vanessa Callirhoë* was also common in Grand Canary; *Vanessa cardui* and *V. Huntera* both occurred; *Gonoptera Cleopatra* was common. *Diadema Bolina* from Orotava, a species only discovered there last year, and *Deilephila tiethymali* from Las Palmas, a species peculiar to the Canaries, and many others. Mr. Bethune-Baker said that the most interesting species in the collection were *Pararge xiphia* from Madeira, and *P. xiphioides* from Grand Canary, two closely allied but distinct species, peculiar to the Madeiras and Canaries respectively; also *Lycana Webbiana*, of which there were four specimens, this being an interesting little species restricted to the Canaries. He called attention to the fact that the *G. Cleopatra* from these Islands differ decidedly from the Mediterranean form of the species. He also showed series of *Pieris brassica* and *P. Wollastoni* from Madeira, and *P. cheiranthi* from Canary, and pointed out the curious fact that *Wollastoni*, although nearer to the European *brassica* than *cheiranthi*, is as yet the more widely divergent species; also a series of *Lycana Webbiana*; also *Anthocharis Charlonia* from Algeria, a species which he said also occurred in the Canaries. Mr. Kenrick said that the most curious feature in the Canary Islands fauna was the occurrence of American forms. *Vanessa Huntera* occurred only in the Canaries and America, and *A. Plexippus*, which is common in the Canaries, is an American species.

Mr. Bethune-Baker said that in working at the moths he had noticed American affinities in several groups, particularly in the genus *Phlogophora*, which was much more American than European. Mr. Bradley, for Mr. J. W. Moore, a remarkable variety of *Arctia Caia*, bred from a lot of larvæ collected locally and reared under natural conditions; the markings were all in their usual positions and forms, but the whole insect was of a rich dark brown, the markings on the hind-wings showing black, and on the fore-wings a lighter brown. Mr. J. T. Fountain, *Argynnis Aurinia*, from Umberslade; a bleached specimen of *Epinephala Janira*, from Wyre Forest; a specimen of *Vanessa Io*, from Kniver Edge, the two sides of which were unequal in size; a specimen of *Vanessa Atalanta*, with white spots in the red bands, from Bournemouth, and another from Himley, near Dudley, with the red bands broken. A specimen of *Apatura Iris*, in which the bands of the fore-wings on the upper-side were small and bent inwards, and on the under-side were only shown as paler bars, not white ones; the under-sides were altogether very slightly marbled, nearly plain, with less white on the fore-wings than usual; the purple iridescence on the upper-sides could be seen on all the wings at once, not on one side only at a time, as usual. Mr. W. Bowater, a lot of butterflies, unnamed, collected about 500 miles up the Niger river. Mr. Kenrick said that one *Pieris* seemed to be new to him. Mr. H. Taylor, *Luperina cespitis*, from Yardley; *Eugonia erosaria* and *Tethea subtrusa*, from Wyre Forest, and *Cirrhaedia xerampelina* taken this autumn at Stechford. Mr. G. W. Wynn, *Gortyna flavago*, from Sutton; *Neuronis popularis*, from Yardley; *Hoplorina croceago*, a bred series from Wyre Forest; *Trichiura eratagi*, from Wyre; *Asphalia diluta*, from Sherwood Forest, and *Calocampa exoleta*, from Sutton. Mr. G. H. Kenrick, *Tephrosia crepuscularia* and *biundularia*, and expressed the opinion that they were but one species and that locally it was single brooded and consisted of light and dark forms mixed. Mr. H. Foster Newey, a number of drawings of larvæ. A communication from Mr. R. W. Fitzgerald was read, giving a list of the *Macro-Lepidoptera* collected and observed by him within a radius of four miles of Uley, near Dursley, Glos. It contained the names of 286 species, and included *Vanessa Antiopa*, taken on November 3rd last; *Charocampa porcellus*, abundant this year; *Setina irrorella* (1); *Xanthia aurago*, common in 1895; *Polia flavicincta*; *Chariclea umbra*, one at sugar, 1896; *Phibalapteryx tersata* and *vitalbata*, &c. Mr. R. C. Bradley, a collection of *Diptera*, &c., made at Bournemouth during the first fortnight of August this year; it included *Geranomyia unicolor*, *Xanthogramma ornata*, *Myopa fasciata*, *Miltogramma punctata*, and *conica*, *Idia lunata*, &c., the last species is only in Mr. Verrall's list of reputed British species.

December 21st, 1896.—The President in the Chair.

Mr. Bethune-Baker showed, for Mr. Abbott, three specimens of a *Lycæna* taken by Mr. C. B. Antram at Upfield, Sussex; they were females, and were suffused with blue, and were believed by the captor to be hybrids between *Icarus* and *Agestis*. Mr. Bethune-Baker said they were a not unusual form of the female of *Icarus*, which he had from several localities. Mr. R. C. Bradley, *Emmelesia ericetata* from Inverness-shire, &c. Mr. P. W. Abbott, a fine bred series of *Agrotis Ashworthii*; they had been reared from eggs laid this year by a bred pair, and had been got through by forcing; he also showed a yellowish specimen of *Arotia Caja*, and a specimen of *A. fuliginosa*, in which the black markings of the hind-wings had been splashed

across the fore part of the wings. Mr. Martineau, a very fine photo slide by Mr. R. W. Chase, of larvæ of *Sphinx ligustri*. Mr. Bethune-Baker, spiders taken by Mr. W. H. Wilkinson in the Canaries and Madeira.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *December 14th*, 1896.
—S. J. CAPPER, Esq., F.L.S., F.E.S., President, in the Chair.

A paper was read by Dr. J. Harold Bailey, entitled, "Notes on a day's Beetle Collecting in Shropshire," in which he recounted the various species taken, and stated it was a ground over which the late Charles Darwin had often worked for Coleopterous insects. Mr. H. B. Prince, a paper, entitled, "Experiences in *Lepidoptera* in 1896." The author, after referring to the general scarcity of insects in 1896, especially in the autumn, drew attention to the controversy now going on as to whether *Lepidoptera* were over collected to extermination, which led to considerable discussion. Mr. Pierce stated that no one who had ever visited the fen district and such places as Barnwell Wold could for a moment believe that over collecting could account for the disappearance of *Polyommatus dispar* or *Lycæna Arion*. That Liverpool Entomologists were especially favourably situated for noticing local species, and mentioned *Nyssia zonaria*, which in some seasons was so abundant that it was impossible to walk without treading on larvæ at each stride, every now and then had gradually disappeared entirely from a locality, and would certainly have been lost had they not been re-introduced by Mr. Gregson and others. *Bombyx trifolii* was very similar, but efforts to re-establish *Lycæna Arion* and *Orgyia dispar* had entirely failed, even for one season, although the latter had been tried many hundreds of times in different parts of the country. The opinion of those present being that it was not man but other agencies that accounted for certain species disappearing from Great Britain. Dr. Bailey exhibited a large number of *Coleoptera*, the result of the day's collecting. Mr. Prince, *Lepidoptera* to illustrate his paper. The President, a long series of *Argynnis Paphia* and *Melitæa Artemis*. Mr. Pierce, *Vanessa c-album* and var. *Hutchinsoni*. Mr. Webster, pieces of wood infested by *Cossus ligniperda*, from a garden at Huyton.—F. N. PIERCE, *Hon. Secretary*, The Elms, Dingle, Liverpool.

ENTOMOLOGICAL SOCIETY OF LONDON: SIXTY-FOURTH ANNUAL MEETING, *January 20th*, 1897.—Professor RAPHAEL MELDOLA, F.R.S., President, in the Chair.

It was announced that the following gentlemen had been elected as Officers and Council for the Session 1897-8:—President, Mr. Roland Trimen, F.R.S.; Treasurer, Mr. R. McLachlan, F.R.S.; Secretaries, Messrs. W. F. H. Blandford, M.A., F.Z.S., and F. Merrifield; Librarian, Mr. G. C. Champion, F.Z.S.: and as other Members of the Council, Sir G. F. Hampson, Bart., B.A., Rev. Canon W. W. Fowler, M.A., F.L.S., and Messrs. H. Goss, F.L.S., M. Jacoby, O. Salvin, F.R.S., J. W. Tutt, and G. H. Verrall. Professor Meldola delivered an Address. A vote of thanks to the retiring President was moved by Lord Walsingham and seconded by Mr. Salvin, and carried; Prof. Meldola replied. A vote of thanks to the other Officers was moved by Prof. Poulton, seconded by Mr. Trimen, and carried. Messrs. McLachlan and Goss replied.

ON THE EARLY STAGES OF *METRIOCNEMUS FUSCIPES*, Mg.

BY CLAUDE MORLEY F.E.S., &c.

I was fortunate enough to obtain many curious larvæ from the interior of rotten stumps, saturated with moisture, among the under-

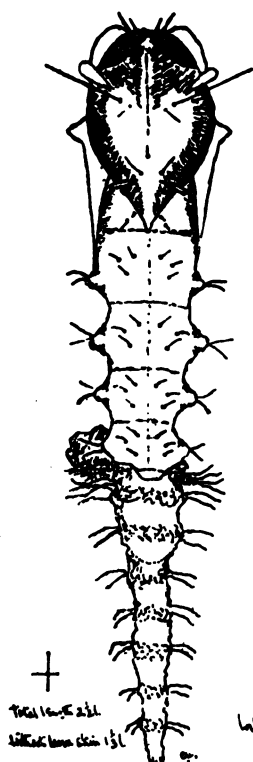


Fig. I.
(Dorsal View.)

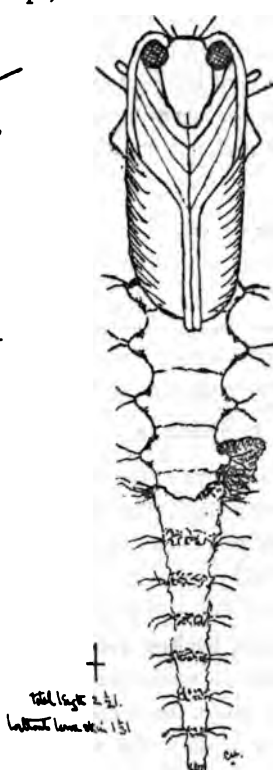


Fig. II.
(Ventral View.)

growth, both in the Bentley Woods, near Ipswich, and also in Epping Forest, during the early spring of last year. Not recognising them, and thinking they might be of interest, I placed them, together with a large piece of their pabulum, beneath a bell glass. They became pupæ during the last week of February, from which the imagines were emerging from March 14th to 20th. I subsequently sent a pair to my friend Mr. F. V. Theobald, B.A., F.E.S., who was good enough to name them for me.

The larva is cylindrical, of a dark slate-colour, and, when full-fed, about $2\frac{1}{2}$ lines long.

It is gregarious, and, like that of various *Tenthredinidæ*, is found feeding side by side in an almost straight row; this is more especially the case when the larva is young, since, when nearly matured, one or two sometimes stray to a little distance. Each segment bears several bristles, which appear to perform a very necessary duty. The damp wood in which the larvæ live is, of course, excessively liable to the attacks of mould, and were it not that these bristles catch and hold the damp at a distance from them (absorbing it in some way I do not understand), very few would escape this dreaded foe to the insect world. Very curious the larva looks covered, at a measurable distance from its body, by a silver coating of dew-drops.

The pupa (figs. 1 and 2) is yellow and shining, with a little horn at the base of the wing-covering, and a peculiar projection on each side of the anterior margin of the disc of the thorax, which, when the pupa is alive, tapers from apex to base, as shown in fig. 1, but after the insect has emerged, its base shrivels, leaving an almost orbicular ball at its apex. The pupa never entirely casts off the skin of the larva, but retains it at the base of the fifth segment. The fly emerges usually early in the morning, and soon dies. All my specimens are decidedly dull and not "rather shining," as described by Mr. Theobald.*

Everton House, Ipswich :

January, 1897.

ON THE USE OF THE TERM TEGULA IN *DIPTERA*.

BY D. SHARP, M.A., F.R.S., &c.

Dr. Meade is quite right in protesting against the use of the term tegula for the calypttron of flies. The word is applied in other Orders of Insects to quite other parts connected with the wing, and it would be unfortunate if it should receive the application originally proposed for it in *Diptera* by Baron Osten Sacken. I do not, however, understand the memoir of Osten Sacken referred to by Dr. Meade (Berl. Ent. Zeitschr., 1896, p. 285) in quite the same way as our distinguished British Dipterologist has done, for it appears to me clear that Osten Sacken in it declines to justify the use of the terms tegula and antitegula, and suggests that in place of them (see p. 288, *l. c.*) the terms squama and antisquama should be used in a correct nomenclature. In such case the calypttron would mean the squama when it acts as a covering for the halter. This would be the more convenient nomenclature, because there are cases in which the squama does not act as a calypttron. Thus we could describe the *Tabanidæ* as possessing an erect squama, but it would be scarcely correct to call it a calypttron. Hence the reformed nomenclature proposed by Baron Osten Sacken seems to me to meet all the requirements of the case, and we can only hope that he will himself consent to use it, instead of continuing the incorrect application of the term tegula.

Cambridge: February, 1897.

* "An Account of British Flies," vol. 1, p. 188.

OCCURRENCE OF "*HADENA*" *MAILLARDI*, Hüb., IN THE
SHETLAND ISLES.

BY C. G. BARRETT, F.R.S.

When looking over the recent captures of my friend Mr. Percy M. Bright in the Shetland Isles, a few days ago, I was struck with the singular appearance and unusual shape of the fore-wings of one of his specimens of *Orymodes exulis*; indeed, it reminded me much more of *Mamestra brassicæ* than of the more usual variations of *C. exulis*. Further examination and comparison with a specimen of "*Hadena*" *Maillardi* in my own collection, and figures of that species in the works of Hübner and Herrich-Schäffer, make it quite clear that this specimen belongs to that form, which is given rank (with doubt) as a distinct species by Staudinger.

The antennæ of this specimen, which is a male, are finely ciliated, dark brown; head and thorax pale grey-brown dusted with black, and the thoracic crests tipped with the same; abdomen pale yellowish-brown, with a small black-tipped crest on the basal segment; fore-wings long, with a rather straight costa, the apex acutely rounded, and the hind margin rounded and very oblique; colour pale yellowish-brown, abundantly dusted with black and marbled with brown; basal line black, abbreviated, and interrupted; first line also black, indented, and forming three long irregular curves; second line blackish, obscure, indented throughout so as to form a series of small crescents, each of these three lines edged with a line of pale ground-colour; subterminal line dusky yellowish-white, indented and irregular, edged inwardly with small, cloudy, black, triangular spots; orbicular stigma ovate, oblique, whitish-brown edged with black, and throwing off an oblique pale streak to the costal margin; reniform stigma dark brown edged with whitish and margined with black, and forming the most conspicuous marking on the wing, being set off by a rather blackened space beyond it; claviform stigma black margined, but obscure; in the space between the second and subterminal lines is a row of very faint, round, whitish dots (which in the figures are much more conspicuous); cilia dark brown dashed with yellowish. Hind-wings pale smoky-brown, with the central lunule, a slender transverse stripe beyond it, and the hind margin, darker; cilia brownish-white.

As before remarked, from the comparative narrowness and acuteness of its fore-wings, their generally mottled appearance, and the white-edged reniform stigma, it bears a curious resemblance to *Mamestra brassicæ*, but this is purely casual; its character of markings is that of *C. exulis*, and among the Shetland specimens is another with the fore-wings a very little broader and more blunt, the edging of the stigma yellow, and a larger proportion of ochreous among the marbling, thus leading on to the more usual specimens from that locality in which the ochreous lines and streaks are so characteristic. The shape of the fore-wings in *Orymodes exulis* is notoriously incon-

stant, indeed, one of Mr. Bright's specimens (a female) has them of unusual *breadth*; and taking all circumstances into consideration, although I am satisfied that this remarkable example is genuine "*Hadena*" *Maillardi* of Hübner, Herrich-Schäffer, Hofmann, &c., it appears equally certain that it is only one of the numerous variations of *Crymodes exulis*. Any one who looks at the figure labelled *exulis* in Professor Hofmann's recently published work, and observes that it is drawn from one of the most obscure and dull looking forms of that insect, will fully understand how natural it is to believe the form *Maillardi* to be a distinct species. It is recorded as occurring in the Alps, the Pyrenees, and the mountains of Norway, but I know of no previous example in the British Isles.

39, Linden Grove, Nunhead, S.E. :
January 7th, 1897.

TERACOLUS AUXO, LUCAS, REARED FROM EGGS LAID BY
T. TOPHA, WALLENGR.

BY GUY A. K. MARSHALL, F.Z.S.

In a not yet published paper recently read before the Zoological Society I attempted to give a revision of the genus *Teracolus*, chiefly in order to demonstrate the extreme seasonal variability of the majority of the species. The assumption, however, that the differences exhibited are seasonal, and not specific, was based entirely on observations in the field, and not on breeding experiments; but, considering that several observers, both in India and South Africa, had independently arrived at precisely similar conclusions on the subject, I felt quite satisfied that the evidence was sufficiently reliable; and, indeed, no one who has had an opportunity of observing these insects in nature for several seasons could possibly have any doubts on the matter. Apparently it is the opinion of some entomologists that such evidence is inadequate, and should not be accepted as proof of seasonal dimorphism until one form has been actually bred from eggs laid by the other, and, therefore, during a short visit last October to the Lower Tugela River in Natal, where the commoner *Teracoli* are fairly plentiful, I determined to obtain, if possible, some definite proof in support of my beliefs. Although to some extent successful, I was disappointed at not being able to accomplish more, but, unfortunately, it was an exceptionally poor spring, and butterflies were unusually scarce, and, moreover, I was a little too late, as the dry-season broods were practically over, being replaced by intermediate and early wet-season

forms, which would not suit my purpose, as I wished to breed wet-season specimens from eggs laid by dry-season ♀s. However, I obtained eggs from dry-season ♀s of three species, but in only one case was I successful in rearing the larvæ, viz., *T. Topha*, Wallgr.

On October 27th, I observed a ♀ of typical *T. Topha* flying round a straggling shrub (one of the *Capparidæ*), on which I saw her deposit four eggs. These were at first of a light yellow colour, but became pink afterwards; they were of the usual *Pierid* shape—elongate, subfusiform, and fluted longitudinally. On the 30th, three larvæ hatched out, one of the eggs being infertile. The description of the full-grown larva and pupa is as follows:—

Larva.—Uniform pea-green, with a narrow yellow lateral line, which does not extend on to the thoracic segments. Upper surface smooth, with no trace of hairs or tubercles.

Pupa.—General shape not unlike that of *T. Pleione*, Kl. (P. Z. S., 1896, pl. x, fig. 18), but decidedly more slender, and the wing-covers rather less prominent. Its most distinct feature is the long cephalic horn, which is nearly as long as thorax, and curves slightly backwards. Colouring adaptive, varying from pale pinkish-sandy, with darker mottling through every shade, to uniform pale green. The brown tints, however, predominate, even when the pupæ are attached to the leaves of the food-plant, being probably influenced by the brown stems of the shrub, as the only pure green pupæ I ever obtained were from larvæ which pupated when the supply of food-plant happened to consist only of young twigs, which were entirely green.

The development of these larvæ was very rapid, the larval stage occupying only 12 days in two instances, and 13 in the third; the pupal stage in all cases occupied 8 days, thus making 23 days from the laying of the egg to the emergence of the perfect insect. Two of the specimens emerged on November 19th, and the third on the 20th, all of them being undoubted ♂s of *T. Auxo*, Lucas; thus definitely proving that *T. Topha* is only a seasonal form of that species.

It is perhaps worth noting that although the larvæ were reared under precisely similar conditions, the imagoes differed somewhat in the development of the black markings on the upper-side. The two earlier specimens had the hind marginal border in the fore-wings comparatively narrow, and had no sign of black along the inner edge of apical patch. This is the early wet-season form. The third example, however, had the border slightly broader and more thickened towards posterior angle, and also exhibited a trace of black scaling along inner edge of patch, thus showing an approach to the more heavily marked full wet-season form. Although I am of opinion that the augmentation of the upper-side black markings in *Teracolus* is probably due directly to climatic causes—as opposed to the protective action of

natural selection, which has probably influenced the under-side coloration—yet in this particular instance the cause of the difference in the specimens is by no means apparent, as they were reared under absolutely identical conditions, and I certainly hesitate to attribute it to the fact that one of them was a day longer in the larval stage.

Estcourt, Natal :

January, 1897.

SOME FURTHER OBSERVATIONS ON BRITISH OAK GALLS.

BY G. C. BIGNELL, F.E.S.

ANDRICUS (APHILOTHRIX) CORTICIS.—According to Cameron's Monograph, vol. iv (Ray Soc.), on the Oak Galls, the time of the appearance of this fly is July ; from my observations it is March and April. When collecting galls in Cann Wood, in December, 1892, I found a cluster of galls of *A. corticis* embedded in new bark growing over an old wound caused by a cart wheel two or three years previously ; in removing the galls I accidentally opened one during the work of removal, and I then observed that the fly was perfectly mature and ready to emerge, its companions, however, did not make their way out until March 4th following.

ANDRICUS (APHILOTHRIX) GLOBULI.—Cameron and Adler state that this fly appears in April ; my experience is January. I was very fortunate in obtaining galls from Dr. Chapman of Hereford on October 13th, 1894, at this time they were quite ripe and falling to the ground. In January, 1896, from 2nd to the 14th, I bred 25 flies out of 238 galls received ; relying on the above authorities, I did not keep a sharp look out for them, consequently I have no doubt many escaped in December.

ANDRICUS RAMULI.—With reference to my note, Ent. Mo. Mag., September, 1895, I mentioned having only bred males ; from a gall obtained at Loddiswell last June I bred males and females, the great majority, however, were the latter.

ANDRICUS (APHILOTHRIX) FECUNDATRIX.—A few notes I have of this species may be of some assistance to a future writer on oak galls. In August, 1887, I collected a number of these galls, and as the flies did not appear in April, 1889, I made a search in June and opened several ; those operated upon contained fat, full grown larvæ. I placed one in a glass tube, on September 10th it had changed to pupa, and on the 23rd to a fly. In May, 1890, I opened the remainder, about

a dozen galls, and the inmates were still in the larval stage. Having succeeded with the other in a glass tube, I placed these in similar receptacles, two only changed to pupa, one on June 30th, 1890, and emerged on July 25th, the other passed its excrement on July 8th, changed to pupa on the 14th; eyes began to colour on the 21st; the ocelli darkened on the 25th; by August 5th the whole insect was coloured dark green, two days later it was black; on August 14th, 1890, the perfect fly appeared. Others obtained in September, 1890, produced flies March 19th, 1892; another lot was obtained in September, 1893, and arrived at maturity April 13th, 1895.

ANDRICUS PILOSUS.—Cameron does not state when these flies appear, he simply says, "galls found on ♂ catkins in May," which is correct, and galls obtained by me in May, 1888, produced flies on June 10th following, and those collected in May, 1895, produced flies on May 22nd. No parasite is mentioned; I have, however, bred *Pteromalus tibialis* in June.

DRYOPHANTA FOLII (= *SCUTELLARIS*).—Cameron states, at page 123, that it "delivers the fly in October." My experience agrees with that of Dr. Adler, viz., that the fly emerges in January or later, according to the weather; if it is a continuous sharp frost in early spring it will remain in the gall until a thaw sets in; I bred them in 1894 from January 18th to 25th.

DRYOPHANTA LONGIVENTRIS.—At page 125 Cameron says, gall "found in August, and becoming ripe in October, when the flies leave them." I do not find this to be the case, those that I bred came out in December, and in one instance four came out on the 31st.

TRIGONASPIS RENUM (*MEGAPTERA*) = *BIORHIZA RENUM*.—Cameron does not say when this apterous species may be expected to emerge from the galls. On October 21st, 1893, I gathered a quantity of these galls, they were then fully ripe and falling to the ground; on January 17th, 1895, I discovered three apterous flies walking about the flower pot in which I kept the galls, and on examining the galls that remained I found the flies had all escaped; I presume, therefore, that they emerged in December, 1894. On referring to Dr. Adler's book, I find that was also his experience. With regard to the sexual form of this species, *megaptera*, the gall Cameron says appears in May, but he does not say when the flies emerged; I have always bred them during the first half of June.

Stonehouse, Plymouth:

February 8th, 1897.

NOTES ON *OLIGOTOMA INSULARIS*, McLACH. (*EMBIIDÆ*), AND ITS IMMATURE CONDITIONS.

BY R. C. L. PERKINS, B. A.

This interesting species is found throughout the Hawaiian group, but not at high altitudes, 2000 feet above sea level being probably about the limit of its range. The places frequented by it are very various: in the mountains it is generally found in the interior of dead branches; lower down, on or under the bark of trees; and on the dry and barren lowlands of the lee side of the islands, beneath the rocks which strew the ground.

In any case the insects spin webs resembling those of spiders, consisting of simple tubes, others more diffuse containing tubes, and sometimes simple masses of web. In these tubes they live, at least by day, but the winged males fly rather freely at night, and are readily attracted by the lights in houses. On the dry rocky ground they are sometimes the most abundant element of the scanty fauna, one or more being found under nearly every stone. Even as many as a score of very minute individuals will inhabit a single mass of web; of adults three or four under one rock is a common number, or about a dozen adults and younger individuals mixed. Under rocks I have found the number of adult females to far exceed that of the males, which may have been partly due to season, or to the activity of the latter, which fly away on acquiring their wings. Sometimes the female will run off with great speed when disturbed like the most active earwigs; probably such individuals have, at the time when they are exposed, strayed from their webs, for, as a rule, they keep hidden in these until they are driven out. Within their tubes they run with ease and quickness backwards or forwards; when exposed they prefer to run backwards, and the speed with which they do so is quite remarkable.

The first trace of wing formation that I could detect was in an individual not greatly inferior in size to the adult male. This begins as a slight modification of those lateral portions of the *meso-* and *metanota* which are curved downwards, but apparently includes also a portion of their true dorsal surface. The boundaries are defined by the slight difference in colour of the parts which form the rudiments of the wings, for these parts are lighter in colour than the rest of the *nota*, though of the same chitinous texture. They are also delineated by very faintly impressed lines, extremely difficult to see except in very favourable position and light. Already the inferior lateral margins of the *nota* appear to be slightly raised or reflexed, and the apices of the wing rudiments project slightly beyond the posterior

margin of their respective segments, as minute free lobes. These lobes can be seen with a fairly powerful lens, and are obvious with the aid of a microscope.

In a later stage the inner margin of the basal half of the wing-pads is still firmly attached to the whole length of the side of the now obviously triangular *nota*; but their line of union is now marked by deep grooves, whereas in the earlier stage the triangular shape was only apparent by indistinct darker lines on the pale ground-colour, and very faint and indistinct impressed lines. The free apical lobes have now greatly increased in size, and are equal in length to that of the *nota*, of which they are outgrowths, so that the front wing-pads now extend as far back as the middle of the hinder pair, or about as far back as the base of the *metanotum*. Hairy themselves and with fringed margins, each bears a red-brown longitudinal line near its outer margin—probably the large radial vein of the mature insect, in which this vein is itself bordered on each side with reddish colour. The part of the wing-pads attached to the *nota* (*i. e.*, the basal portion) is still more chitinous than the free apical parts, which are somewhat thick and swollen. Two individuals, however, agreeing in all other respects, had the wing-pads more of the texture of the adult, so it is not improbable that this condition may have been attained by another moult.

In the adult the wings are again greatly increased in length, and have become thin, soft and flimsy. The *meso*- and *metanota* form two triangular pieces, one behind the other. The main attachment of the wings is at the anterior angles, but along the whole length of the sides of the *nota* is a thin fringe, arising from the base of wings, and obviously a part of them. This fringe is now the only trace of the firm connection of the inner margin of the bases of the wing with the whole sides of the *nota*, as exhibited in the earlier stages.

The female has no such complicated structure of the *nota*, but they remain through life in much the same condition as in the young of either sex. The abdomen of the female is cylindrical and comparatively stout, that of the male flattened and depressed. Apart from the very different structure of the notal sclerites, and the absence of wings, the female has comparatively less developed eyes, and the joints of the antennæ moniliform—decidedly less elongated than those of the male.

In the Cambridge Natural History ("Insects," Part 1, p. 351) a reproduced figure is given of *Oligotoma Michaeli*, McLach., which, but for the presence of wings, agrees pretty well in general form with the

female of the Hawaiian species, of which that sex is always wingless. But the structure of the meso- and metanota of the male of the latter and the mode of the attachment of the wings, make it very doubtful whether the two species could be placed in the same genus. I imagine *Oligotoma insularis* to be a highly abnormal species. In the book mentioned above we read (*l. c.*, p. 352), "When they" (*Embiidæ*) "bear wings,* *there is no modification or combination of the segments for the purposes of flight, the condition of these parts being, even then, that of wingless insects*: so that the *Embiidæ* that have wings may be described as apterous-like insects provided with two pairs of inefficient wings." From the great difference between the meso- and metanota of the ♂ and ♀ of the Hawaiian species, it is evident that the simple structure of the latter sex is not always present in the former. The more complicated structure of these parts in the ♂ appears partly at least for the purpose of packing the wings flatly on the back and securing them so, for it is almost as difficult to extend these as the wings of *Perficula*.

In one group of specimens captured I found a ♂ with only the stumps of the wings remaining. It is probable, however, that this had been caused by some predatory creature, and not that they had been voluntarily removed.

Lahaina, Maui, Hawaiian Islands :
January, 1897.

COLEOPTERA, &c., IN THE NESTS OF ACULEATE HYMENOPTERA.

BY W. H. TUCK, M.A.

Since the publication of my list of Inquilines in wasps' and bees' nests (*Ent. Mo. Mag.*, 2nd ser., vii, pp. 153-155) I added last autumn the following :—

VESPA CRABRO.—*Lathridius minutus*, *Cryptophagus scoticus*, *C. badius*.

V. GERMANICA.—*Quedius brevicornis*, *Philonthus laminatus*, *P. ebeninus*, *Læmophilus ferrugineus*, *Oxytelus inustus*, *Apion assimile*.

V. VULGARIS.—*Notiophilus palustris* (probably a casual intruder), *Bembidium lampros*, *Homalota gregaria*, *H. sodalis*, *Homalium exiguum*, *Cryptophagus distinguendus*.

V. SYLVESTRIS.—*Dromius linearis*, *Niptus hololeucus*.

BOMBUS TERRESTRIS.—*Heterothops 4-punctula*, *Antherophagus nigricornis*.

B. MUSCORUM.—*Metablotus truncatellus* (I found quite 30 in one nest only), *Homalota ignobilis*, *Tachyporus tersus*, *T. humerosus*, *T. brunneus*, *Medon propinquus*, *Tachinus marginellus*, *Plectroscelis concinna*.

* The italics are mine.—R. C. L. P.

Also *Anthocoris sylvestris*, *Lytocoris campestris*, and *Rhyarochromus chiragra* (Hem.-Heteropt.).

I took a few *Diptera*, but I hope to obtain many more in the early summer from the old nests which I have preserved.

As I was very successful in finding *Metæcus*, I devote a special paragraph to it.

I got 49 out of 41 nests. Only a dozen nests, however, contained it:—August 1st, 12; 4th, 2; 10th, 8; 15th, 2; 22nd, 2; 23rd, 2; 31st, 1; September 1st, 7; 7th, 4; 8th, 4; 14th, 4; 17th, 1. Several nests examined after this date showed signs of the parasite, but it had departed, as this wasp (*V. vulgaris*) was very early in 1896.

I consider the period given the best for this work, but in a late season I have taken *Metæcus* as late as October 2nd.

The following table shows the different results of other years:—

	Nests opened.				Nests with <i>Metæcus</i> .			
1891	11	...	...	...	3
1892	5	...	...	...	0
1893	17	...	...	...	4
1894	17	...	...	...	2
1895	15	...	...	...	1

From this it may be inferred that any one attempting this work must have plenty of leisure, and be prepared to undergo much labour. He should know, or be told of, every nest (say) within a mile radius of his house. (I give a small reward for the discovery of each wasp's nest, provided it has not been tampered with.) He should be able to tell at a glance, by the flight and manner of the wasps, whether they are of the right kind, viz., *V. vulgaris* (the small "anchor-faced" wasp), and to form an opinion, by the number of workers going in and out, of the proper time to take the nest; and also, of course, to take it properly, and bring it home intact for examination after digging it out.

The nests in banks with rough herbage, or inside, and by the edge of woods, are the most productive, and certain banks facing south often contain the host and parasite year after year. The nests in open fields rarely yield anything. A nest of *V. germanica*, although close by, never contains the parasite, which I have taken in tree-stumps, and once in a hot-bed in a walled garden (August 1st, September 7th).

The parasite is reared either in the male or worker cells, generally near the edge or quite in the centre, and it is very often impossible to tell without tearing away the lid, whether the cell contains a wasp or parasite, which, when liberated, rushes quickly out, and often takes to flight.

Further than this, I fear that the life-history of *Metæcus paradoxus* is still a mystery, especially as to how the females pass the winter, and how the species is propagated when the seasons are adverse to the wasps.

It is quite possible that the nests of *V. rufu* may also contain *Metæcus*, but I have had no opportunity of studying this wasp, which is rare in East Anglia.

Bury St. Edmunds :

January 28th, 1897.

Strophosomus fulvicornis, Walton.—On April 18th last, while beating the young hazels and birches in a wood in this neighbourhood, I noticed *S. capitatus* in profusion, and, as the specimens showed great variation in size and colour, I captured a very large number for examination, expecting to find *S. fulvicornis*, Walt., amongst them. In this I was not disappointed, as there were several examples agreeing sufficiently well with Walton's description. The uniformity in the colour of the depressed scales, and the shorter, sparser, and finer suberect hairs (or hair-like scales) on the elytra—two of the main characters relied upon by Walton—prove to be of no specific value when a long series is examined. In some specimens (*fulvicornis*, Walt.) the seriate, suberect hairs are extremely short, fine, and widely scattered on the elytra, becoming longer and more distinct on the apical declivity; and in others (*capitatus*, De Geer) they are long and conspicuous throughout. Another character relied upon by Walton is the subremotely punctured thorax in *S. fulvicornis*, and the rugulosely punctured thorax in *S. capitatus*; but when the scales are removed I am unable to detect any difference. The largest examples are extremely like *S. coryli*, from which they differ in having the suture of the elytra not denuded of scales at the base, the elytra themselves rounded at the sides below the shoulders (instead of subparallel, as in *S. coryli*), and the thorax less constricted behind, and more transverse. *S. fulvicornis*, reinstated as a distinct species in Fowler's "Coleoptera of the British Islands" (v, p. 190) (1891), and in Sharp and Fowler's "Catalogue" (1893), cannot, in my opinion, be regarded as anything more than an extreme form of the very variable *S. capitatus*, De Geer (= *obesus*, Marsh.). Walton himself rather doubted the distinctness of his species, his description having been taken from three specimens only, these being from Parley Heath.—G. C. CHAMPION, Horsell, Woking: February 2nd, 1897.

Zeugophora flavicollis, Marsh.—British specimens of this species, which has recently been found, singly, by Messrs. F. Waterhouse and B. G. Rye, on Wimbledon Common, and, in some numbers, by Mr. B. S. Harwood, near Colchester, have the legs entirely yellow or reddish-yellow, as described by Marsham, in 1802, in his "Coleoptera Britannica" (p. 217), and as figured by Stephens.* Weise [Naturg. Ins. Deutschl., vi, p. 58 (1881)] describes three forms of *Z. flavicollis*, taking the one with infusate or black hind femora as the type (though Marsham distinctly states

* Ill. Brit. Ent., Mand., iv, t. 22, fig. 4.

that his insect has pale legs); he gives as varieties:—*a, australis*, Weise (femoribus posticis rufo-flavis), and, *b* (elytris sub humeris rufo-flavis). Our British insect belongs to his var. *a*, and the name *australis*, Weise, cannot, of course, be used for it, as the definition applies exactly to the form described by Marsham. I captured a long series of the form with dark hind femora at Mendel, in the Austrian Tyrol, at an elevation of about 4000 feet, in July last; these specimens are not nearly so large as any of the British examples I have seen, some of them being very small. They were found upon *Populus tremula*, the only food-plant mentioned by Weise. *Z. scutellariæ*, Suffr., in one of its varieties (*frontalis*, Suffr.), closely resembles *Z. flavicollis*, but may be known from it by the more pubescent body, &c.; it is the only European species of the genus not found in Britain.—*Id.*: Jan. 23rd, 1897.

Notes on the Coleoptera of the Liverpool district, 1896.—The Liverpool district, which comprehends S.W. Lancashire and W. Cheshire, shared in the general climatic conditions common to the rest of the country during last year. An exceptionally mild winter, an early spring, a hot and extremely dry May and June, were succeeded by a general break of the weather in July, and a late summer, wet and inclement beyond the average.

It may be interesting to record the salient features of such a year, as regards the local *Coleoptera*. There seems no reason to doubt that the correlation between atmospheric conditions and the absence or abundance of any species of insect is fundamental and persistent, although often indirect and always exceedingly complex. Did, however, annual records exist over a sufficient number of years, giving on one hand accurate meteorological statistics, and on the other the observed entomological phenomena of any certain district, it is certain that such observations would afford valuable material for investigation into what seems one of the most difficult problems of entomological biology—the disparity between the annual scenes of individual occurrences in any sequence of years, the extraordinary extremes experienced by the same species in seasons of scarcity and seasons of abundance.

In this district the most prominent features of the past year were:—early appearance and brief continuance of all species up to the end of June; comparative scarcity of *Geodephaga* and *Staphylinidæ*; abundance of *Phytophaga*; particular relative abundance of *Longicornia*; extreme paucity of imaginal life during July and August; and almost utter absence of usual autumnal fungivorous species.

Turning more to detail, we have to record as species not previously noted in our district:—*Silpha obscura*, *Aphthona cærulea* (Payk.), *Ernobius mollis*, *Apion rufirostre*, *A. radiolus*, *A. æneum*, *Hypera suspiciosa*, *Bagois tempestivus*, *Ceiodius quercus*, *Ceuthorrhynchus marginatus*, and *Cionus scrophulariæ*.

Of species of whose previous occurrence we have only single records during a period of some twenty-five years, we can report *Heptaulacus villosus*, *Pogonochærus bidentatus*, *Strangalia armata*, *Adimonia tanacetii*, and *Cassida obsoleta*. *Carabus nitens*, lost to local collectors for many years, occurred again this spring at Formby, one of its old localities. *Malachius bipustulatus* was abundant in June, having only occurred in two previous years, and then very rarely. *Clytus arietis*, more plentiful than in any previous year of which records have been kept. *C. mysticus*, abundant in a single and very circumscribed locality. *Gastrophysa raphani*, generally a scarce insect, in the utmost profusion in May, and again in July, in certain

localities. *Ceuthorrhynchus litura*, a species of which only a few specimens had been occasionally met with, was exceedingly abundant on thistles, in June, all over the district. *Cionus scrophulariæ* and *C. pulchellus*, the former new to the district, and the latter only recorded once previously, were by no means rare on *Scrophularia* and *Verbascum* respectively.

The above are some of the most noticeable features of the past year, as represented by the local *Coleoptera*. Of course, none of the species mentioned are by any means generally rare, but their occurrence may be, perhaps, interesting, as showing how a local fauna may be modified by influences probably climatic.—W. E. SHARP, Ledesham, Cheshire: *February*, 1897.

Asopophilus Bonnairei, Sign., on the Irish Coast.—The south-western distribution in England of this interesting marine Hemipteron would naturally lead to an expectation of its occurrence on the south coast of Ireland. It is satisfactory, therefore, to be able to record the capture of a specimen by my friend and colleague Mr. A. R. Nichols. While engaged in collecting marine invertebrates near Dungarvan, Co. Waterford, for the Royal Irish Academy Flora and Fauna Committee, he found the insect under a stone below high-water mark.—GEO. H. CARPENTER, Science and Art Museum, Dublin: *January*, 1897.

Food-plants of Platyptilia tesseradactyla, L.—I am afraid that in my notice of the occurrence of this insect in Ireland (*ante* p. 25) I inadvertently gave one of its food-plants two different names—deriving that portion of my information, of course, from continental authors. My old friend the Rev. E. N. Bloomfield writes, quoting Mr. Hemsley of the Kew Herbarium—" *Gnaphalium dioicum* is a synonym of *Antennaria dioica*. The name *Gnaphalium arenarium* has been applied to at least four different plants, various species of *Helichrysum*, and *Gnaphalium luteoalbum*, probably the plant intended. This (Jersey cudweed) grows in Jersey and Guernsey, but is not wild in Britain.

With respect to *Gnaphalium (Antennaria) dioicum*, Bentham says, "Abundant in Scotland, Wales, Ireland, and many parts of England, descending occasionally nearly to the coast level; general habitat, mountain heaths, common in Northern Europe, Asia and America to the Arctic Regions, and in the great mountain ranges of Central and Southern Europe and Russian Asia."

I am greatly indebted to my friend for this correction; the group of plants is obscure, and the species often hard to determine. Little doubt need, I think, be felt that the latter plant (*Gnaphalium dioicum*) is the food of this little "plume" in its newly discovered Irish localities.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E.: *February*, 1897.

Colias Hyale in Scotland.—I took a specimen in a clover field on August 5th last. I saw it flying in the field, and was at once struck by its unusual colour, so gave chase, but was not at once able to capture it. It did not, however, leave the field, and after waiting some time my chance came at last. It settled on some clover near, and with a cautious approach and a quick down sweep of the net I landed it all right. I need not say that I was astonished when I saw what I had got, but I misnamed it *C. Edusa*, and have not before mentioned the capture because my book

said that it was one of our common species.—J. R. MALLOCH, Bonhill, Dumbartonshire: *February*, 1897.

[This specimen, which Mr. Malloch has allowed me to examine, is of great interest, not only from the extreme rarity of the species in Scotland, but also from its remarkable beauty. It is of the more yellow variety, and the black borders of both fore and hind-wings are more fully developed than in almost any individual of the species which I have seen; so much is this the case that I do not at all wonder the captor should have supposed it to be the pale var. (*Helice*) of *Colias Edusa*.—C. G. B.].

Noctua depuncta and *Mania maura* and its vars. in Roxburghshire.—When sugaring some trees here for *Noctua* in the beginning of August last I took a specimen of *Noctua depuncta* on a trunk of spruce fir, settled amongst common insects such as *T. pronuba*, *X. polyodon*, &c. *Mania maura* at the same time was not uncommon on the trunks (I note this species, not having taken it in this district before), and I took a series of eleven fine specimens, including the coppery-brown coloured variety, and another intermediate between the typical form and it, with the orbicular and reniform spots having a distinctly paler outline, and also the marginal border of hind-wings and the blotch or spot at apical angle of fore-wings much lighter in colour and more distinctly defined.—A. ELLIOT, Caverton, Roxburgh, N. B.: *February 3rd*, 1897.

Cedestis Gysselinella, Dup., in Norfolk.—As Mr. J. H. Durrant, in his note (Ent. Mo. Mag., ser. 2, vii, 228) on the occurrence of *Cedestis Gysselinella* at Merton during the past season, says that he learns from Mr. Barrett that it is an addition to the Norfolk list, it will doubtless interest them both to know that the insect had been previously captured in that county by the Rev. C. R. Digby, who secured three specimens, for the identification of which I am responsible, at Rockland on June 20th, 1893. During his visits to Norfolk Mr. Digby has met with several other good local species, but as I believe that all of them are well known to occur there, it is needless to mention them by name.—EUSTACE R. BANKES, The Rectory, Corfe Castle: *December 16th*, 1896.

Albinia aberration of *Catoptria ulicetana*, Hw.—On May 10th, 1892, I captured on the Isle of Purbeck (Dorset) coast an interesting male albino of *Catoptria ulicetana*, Hw. The fore-wings, which are in fair but not first-rate condition, are glossy white tinged with cream-colour, especially towards the termen. The usual leaden-metallic lines situated on either side of the ocelli are traceable, but are shining silvery-white; these are the only markings visible, nor are there any indications of the ocelli themselves or of the ordinary costal strigulae. The hind-wings and all the cilia are glossy white, and the other parts of the insect are proportionately pale. Fortunately I had no difficulty in identifying the specimen, for its flight, as well as its general appearance when in the net, enabled me to recognise it at once as this species.—ID.: *January 9th*, 1897.

Philopotamus montanus in February.—I noticed a fine specimen of this species in our porch to-day, no doubt attracted the previous night by the light. Is not this a very unusual date for this species?—C. A. BRIGGS, Rock House, Lynmouth: *February 17th*, 1897.

[Certainly most unusual.—R. McL.].

Societies.

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *November 13th, 1896.*—DR. SHARP, President, in the Chair.

Mr. Jones exhibited a local imago of *Smerinthus tilia* with both its wings deformed and correlative variation of marking. Mr. Rickard read a paper discussing some questions in connection with the formation of Lepidopterous pupæ, making reference to the so-called "Poulton's Line" and the criticisms of Dr. Chapman and Mr. J. W. Tutt thereanent. He said that the proboscis of the pupa of the Death's Head Moth is 40 mm. long, that of the imago is but 14 or 15 mm. He suggested that the brevity might be in connection with the habit of extracting honey, and also that the reason why it was so rarely found in bee-hives in this country might be found in the construction of the hives. The object disclosed by the last moult of a Lepidopterous larva resembles neither a caterpillar nor a pupa, but is much more like the imago. There is also present a thick coating of gelatinous-looking material enveloping the entire organism; the external surface of this material rapidly hardens and takes on the special form of the pupa. As the lower portion of it solidifies it shrinks away from the enclosed imago, with the result that the pupal imago is left loose inside the pupal envelope, the only organic connection seeming to be the tracheæ that connect the imaginal with the pupal spiracles. Proof of the accuracy of this statement is afforded by the presence of wing-cases on the pupæ of wingless female moths. Thus the female of the "Vapourer," for instance, possessed imaginal wings of average size at the last larval moult, such wings being subsequently re-absorbed. The contradictory statements of Professor Poulton and Mr. Tutt are easily reconciled if we suppose that the Professor's observations were made at an early stage of pupal existence, while Mr. Tutt's were made immediately before emergence of the imago.

January 15th, 1897.—The President in the Chair.

Mr. Fleet exhibited a good specimen of a large weevil (*Cleonus nebulosus*) from the crop of a stone curlew purchased in the market; it was suggested that a probable locality for both bird and beetle was Brandon. Dr. Sharp, a fine mass of the cocoons of *Aphomia sociella*, picked up in the neighbourhood; also some remarkable Dipterous larvæ, viz., an undescribed Tabanid larva from the New Forest, with feet disposed all over the body, and somewhat allied to *Tabanus spodopterus*—he thought it might be the larva of *Atylotus*; larva of *Scenopinus fenestralis* from Bucks; he called attention to the importance of ascertaining whether this larva is injurious as commonly supposed, or whether it is present in woollen goods only to destroy other larvæ, such as those of the clothes' moth; larvæ of *Microdon* found in Portugal by Colonel Yerbury, which show no sign of segmentation; also *Idolothrips spectrum* sent by Mr. Froggatt from New South Wales.

January 29th, 1897.—The President in the Chair.

The President exhibited a specimen of a large click-beetle of the genus *Chaleolepidius*, and showed that if the anterior parts were separated from the afterbody and then replaced, the front part would be propelled to a distance from the body; he therefore concluded that the explanations ordinarily given of the jumping of the

click-beetles were unsatisfactory, and he suggested that it might be found that the act really depended on an elasticity arising from the mode in which the parts of the mesothorax and elytra were shaped and fitted together. Mr. Rickard read a paper upon "Jumping Beans." He said that probably the larva, after consuming all the kernel of the nut, attacked the shell; in this endeavour to obtain food it breaks its way out of the nut, while the struggles supply the motive force to which the jumping is due. He thought that the actual motion was merely mechanical, and determined by the formation of the Euphorbiaceous seed.—C. J. WILKINSON, *Hon. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *February 8th, 1897.*
—S. J. CAPPER, Esq., F.L.S., F.E.S., President, in the Chair.

The Rev. R. Freeman gave a lecture, entitled, "Elementary Biology and Anatomy of Insects," in which he traced the connecting links from the protoplasmic amœba to the perfect insect, describing in detail the organs of nutrition, the nervous system, breathing organs, &c., of insects. The lecture was fully illustrated by diagrams from the author's preparations. Mr. John Watson, of Manchester, exhibited specimens of *Belenois teutonia* and *nisea* from Australia, and showed transitional forms from the New Hebrides, proving that these two species must now be considered as only local forms of the one; he also showed *Eurycus Cressida* and form from North Queensland. The Rev. A. M. Moss, a curious bronze coloured variety of *Amphidasis prodromaria* captured by himself at Windermere. Mr. Gregson, a box of asymmetrical specimens of *Lepidoptera*; the collection included two fine varieties of *Arctia Caja*, the upper wings of one specimen being very different.—F. N. PIERCE, *Hon. Secretary*, The Elms, Dingle, Liverpool.

THE ANNUAL MEETING was held on Monday, January 11th, in the Class Room of the Free Public Library, William Brown Street. The President occupied the Chair. Mr. F. N. Pierce, Hon. Sec. pro tem., read the Report of the Council, from which it appeared that nine meetings had been held during the past year, at which valuable papers had been read, and many interesting exhibits shown. The following Officers were appointed for the ensuing year:—President, Mr. S. J. Capper; Vice-President, Rev. F. Freeman; Hon. Secretary, Mr. F. N. Pierce; and Hon. Treasurer and Librarian, Mr. H. Locke. The following gentlemen were elected on the Council:—Mr. W. E. Sharp, Dr. J. W. Ellis, Messrs. W. Webster, B. H. Crabtree, and Douglas Walker. The President then delivered his Annual Address.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
December 10th, 1896.—C. G. BARRETT, Esq., F.E.S., Vice-President, in the Chair.

Mr. Brooks exhibited a very long series of *Acherontia Atropos*, bred from pupæ obtained at Long Sutton this year; one specimen was much lighter on one side than on the other, it was suggested that a deficiency of fluid in the wings through injury was the cause. Also a very long series of *Triphana fimbria*, bred from larvæ collected near Rotherham. Many specimens were light and only very few of the dark form. It was stated that the colour variation was by no means sexual, and

tended to follow the parent coloration. Mr. Mansbridge, a long and very variable series of *Agrotis auxiliaris*, from N. America, taken in 1893, and read a paper on the exhibit, describing the forms of variation, life-history, and distribution of the species. Mr. Barrett, two specimens of *Agrotis subgothica*, said to have been captured by Raddon of Barnstable, and also forms of *A. tritici* of the *v. subgothica*. A discussion ensued in which it was conclusively proved, by reference to Doubleday and others, that the *bona fides* of Raddon could not be relied on. Mr. Adkin read an addendum to his previous paper on *Triphana comes (orbona)*, giving more detailed evidence of the occurrence of the species and its var. *Curtisii* in various localities. He also exhibited some Shetland forms of *Camptogramma bilineata*, one having a dark fascia, broad and complete, with a pale central blotch. Mr. Dennis, microscopic slides showing the striking distinctions between the antennæ of *Hybernia aurantiaria* and *H. defoliaria*.

January 14th, 1897.—The President in the Chair.

Mr. Routledge exhibited specimens of *Acronycta menyanthidis* from Carlisle, with white thorax; *Xylophasia rurpa* from North Devon, light grey with fine lines; *Agrotis segetum*, with silvery fore-wings and unusually white hind-wings; *Noctua c-nigrum*, with the *c* reduced to two spots; and a *Triphana pronuba* from Epping, with lunules on the hind-wings. Mr. R. Adkin, *Tephrosia crepuscularia*, bred, spring brood, March and April, and summer brood, June, some of the latter being equal in size to the former; *T. biundularia*, bred, May, all from the London district. Also, on behalf of Mr. W. F. de V. Kane, *Dianthæcia capsophila* from a small island off the Kerry coast, with examples from Howth and Isle of Arran (Galway) for comparison; the Kerry specimens were unusually dark for the species and were bred. Mr. Hewett, of York, a varied series of *Taniocampa munda* from York, including a fine mahogany-coloured form; a melanic variety of *T. cruda*; a series of vars. of *Abraxas grossulariata*, var. *Varleyata* bred from a wild larva; the various forms of *Arctia lubricipeda*, including a series of intermediate forms; a preserved hybrid larva from ovum laid by a female *T. munda* taken in cop. with a male *T. stabilis* at York, 1896; series of vars. of *A. sylvata (ulmata)*; three females of *Odonestis potatoria* of the male coloration; and three vars. of *Saturnia carpinii*. Mr. Barrett, on behalf of Mr. Kane, a specimen of *Boarmia repandata*, *v. destri-garia*, *Phothedes captiuncula*, and *Aciptilia tetradactyla*, from Ireland; also a series of *Eupithecia consignata*, bred in and in continuously since 1874, and only on one occasion some ten years ago had a wild strain been introduced. At first they gradually decreased in size, but after the introduction of a wild strain and the sleeving out process they increased in both size and depth of colour. Mr. Tutt, a long series of *Acherontia Atropos* bred by Mr. Burroughs of Rainham, showing considerable variation in the colour of the "skull," and said that he did not consider the species adapted to exist in this country. They were forced. Mr. South, a series of *Tephrosia* from Japan. Mr. Bacot, series of the same from Epping, &c. Mr. McArthur, a living larva of *Aplecta occulta*, and a bred series of *Heliothis peltigera*. Mr. Young, of Rotherham, very long series of *Spilosoma lubricipeda*, var. *satima* and var. *fasciata*, and a var. very closely resembling var. *Deschangei* of *S. menthastri*; it was noted that all British entomologists who bred this species obtained intermediate forms freely, while it was not so on the continent. To illustrate his paper Mr. Hewett

exhibited very long series of both broods of *T. crepuscularia* and also series of *T. biundularia*; these were from fifty or sixty different localities. Most of the known forms were shown, as well as preserved larvæ. On behalf of Mr. de V. Kane, the latter species from Irish localities; and both species from Swansea on behalf of Mr. Robertson. He then read a most exhaustive paper on these two species, and included in it were the observations and experiments of more than fifty well-known entomologists, who had been interested in this question. In the discussion which followed Mr. South asked (1) Did any character exist by which the species could be separated with absolute certainty? (2) Which was the commoner species? To the former no answer was forthcoming, but to the latter Members agreed that *T. crepuscularia* was very local, while *T. biundularia* was more common. Mr. Barrett was of opinion that, as a result of Mr. Hewett's paper, all distinctions between the two were now completely swept away. Mr. Tutt thought that here were examples of recent evolution, in fact, we had species in the making as in the case of some of the *Zygana*. He insisted that the naming of the two forms and the consideration of them as distinct, although very closely allied, was a matter of convenience necessitated in our comparisons with continental and Asiatic representatives. Messrs. Carpenter, Bacot and others continued the discussion.

January 28th, 1897.—The President in the Chair.

This was the Annual Meeting, and devoted to receiving the Report of the Council, the reading of the balance sheet, and the Address of the retiring President. The Officers and Council elected for the ensuing year were:—President, R. Adkin, F.E.S.; Vice-Presidents, R. South, F.E.S., and J. W. Tutt, F.E.S.; Hon. Treasurer, T. W. Hall, F.E.S.; Hon. Librarian, H. A. Sauzé; Hon. Curator, W. West, Greenwich; Hon. Secretaries, Stanley Edwards, F.L.S., F.E.S., and Hy. J. Turner, F.E.S.; Council, Messrs. C. G. Barrett, F.E.S., A. W. Dennis, H. S. Fremlin, F.E.S., W. Mansbridge, F.E.S., A. W. Mera, Hy. Tunaley, F.E.S., and Col. C. Partridge. Mr. South then delivered his Address.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: February 3rd, 1897.—Mr. ROLAND TRIMEN, F.R.S., President, in the Chair.

The President appointed as Vice-Presidents The Rev. Canon Fowler, M.A., F.L.S., Mr. R. McLachlan, F.R.S., and Professor Meldola, F.R.S.

Mr. F. Bates, Mr. D. D'A. Wright, and Mrs. E. Brightwen were elected Fellows of the Society.

Mr. Champion exhibited an extensive series of *Coleoptera* collected by Mr. R. W. Lloyd and himself in July last in the Austrian Tyrol, and containing about 450 species, including 35 of *Longicornia* and about 20 of *Otiorrhynchus* (the most characteristic beetles in the places visited); he also exhibited about 85 species of *Coleoptera* from Cintra, Portugal, collected by Col. Yerbury, the most interesting being *Carabus lusitanicus*, F.; also, on behalf of Mr. W. H. Harwood, two specimens of the rare *Zeugophora flavicollis*, Marsh., from Colchester. Mr. Barrett showed specimens of the true *Platyptilia tesseradactyla*, L. (= *P. Fischeri*, Zell.), new to the United Kingdom, and taken in Co. Galway by Mr. W. F. de V. Kane

and the Hon. R. E. Dillon. The species was widely distributed in North and Central Europe, often occurring at a considerable elevation, and was said to feed on *Gnaphalium*. Mr. Tutt stated that he had found it to be common in the Alps among *Petasites*; and Lord Walsingham spoke in support of the identification. Mr. McLachlan exhibited cooked locusts (*Schistocerca peregrina*) received from the Rev. A. E. Eaton, and sold under the name of "Djerard" in the market of Biskra, Algeria. They were cooked whole, but the abdomen only was eaten. Mr. Tutt exhibited for Mr. H. B. Prince some *Lepidoptera* from the Cheshire coast, and for Mr. W. H. B. Fletcher some typical specimens of *Zygana Oechsenheimeri*, Zell., from Piedmont, and also some hybrid *Zygænids*, obtained by crossing *Z. Oechsenheimeri* ♂ with *Z. filipendula* ♀. The hybrids were fertile *inter se*. The males of the cross exhibited very markedly the characters of the male of *Z. Oechsenheimeri*; on the other hand, the females (with two exceptions) strikingly resembled *Z. filipendula*. Mr. Tutt also showed, for Mr. J. B. Hodgkinson, a number of obscure British *Micro-Lepidoptera*, many of which had been regarded as new species. The validity of the determinations was questioned by Lord Walsingham, Mr. B. A. Bower, and others, and the first named speaker strongly deprecated the practice of positively recognising or describing such obscure forms, particularly when British, from single or worn specimens. A suffused aberration of a Gelechiid taken at Witherslack, and described under the name of *Lita intermedia* (Ent. Rec., ix, p. 36), was referred to *Lita fraternella*. A paper was communicated by Dr. A. G. Butler, F.L.S., on "Seasonal Dimorphism in African Butterflies," which led to a long discussion, chiefly on the so-called "dry-season" and "wet-season forms." Mr. Merrifield stated that he had been unable experimentally to modify the colour and markings of *Lepidoptera* by variations in humidity. Mr. Tutt believed that Mr. Doherty had obtained "wet-season forms" of Oriental species by keeping the pupa in a moist atmosphere.—W. F. H. BLANDFORD and F. MERRIFIELD, *Hon. Secretaries*.

[In the Report of the Annual Meeting (*ante* p. 48) the name of Prof. Meldola was accidentally omitted in the list of the Council.—Eds.].

NOTES ON COCCIDÆ FROM THE ROYAL GARDENS, KEW.

BY E. ERNEST GREEN, F.E.S.,

WITH ADDITIONS BY R. NEWSTEAD, F.E.S.

By the courtesy of the Director of the Royal Gardens at Kew, I was able, in May last, to carefully examine the plant-houses, and to collect specimens of the various Coccids affecting the plants. The time at my disposal was insufficient for the examination of all the buildings, the large Palm House being left over for another visit. I had no opportunity of returning to the work, but Mr. R. Newstead, of Chester, spent several days at the Gardens in July, and paid especial attention to those houses unvisited by me, resulting in the discovery of several interesting species, particulars of which he has himself given below.

The plants at the Gardens are too well tended and looked after to harbour many insect pests, but my day's collecting produced sixteen distinct species, five of which (as I am informed by Mr. Newstead) are new to the British lists. These are, of course, introduced species, and are likely to occur only in plant-houses; but no catalogue of the British Coccids would be complete without those species affecting plants under glass.

The following is a list of my captures at Kew. In giving the name of the host-plant, I have mentioned the country from which it comes; but it must not be supposed that the parasite has in every case been imported with the plant. In many cases the Coccids have doubtless strayed from neighbouring plants; and some species are practically omnivorous.

ASPIDIOTUS ALOËS, Boisd.—On a plant of *Agave Palmeri* I found a colony of insects answering well to Signoret's description of *A. aloës*. The scales were, however, very light straw colour instead of white. The insects were crowded on the bases of the leaves, and had insinuated themselves within the yet unfolded leaf buds. This species has not previously been recorded from the British Isles.

ASPIDIOTUS FICUS (Riley).—A young tree of *Garcinia cambogia* (the gamboge tree), labelled from Ceylon, supported a large colony of these insects. ♂ and ♀ scales, in all stages, were present on both surfaces of the leaves. Prof. Comstock quotes this species as an injurious pest on young orange trees in the United States.

[Abundant also on *Lonchocarpus Barteri*, Benth., and *Eugenia malaccensis*, L.—R. N.]

ASPIDIOTUS NERII, Bouché.—A few specimens of this insect were found on the fronds of a palm, *Aristea major* (from Madagascar).

ASPIDIOTUS PERSONATUS, Comst.—This species occurred in abundance on *Tillandsia corallina* (from Brazil) and *Tillandsia confertiflora*. The small, highly convex, black scales, and the curious lobe at the cephalic extremity of the ♀, make it impossible to mistake this insect. It has not previously been recorded from the British Isles. The original examples, described by Prof. Comstock, came from Cuba.

PINNASPIS PANDANI, Comst.—A few small scales collected on *Pandanus conoideus* (from Malay) appear to belong to this species, but the material was insufficient for a satisfactory determination. There seems to be some question as to the possible identity of *P. pandani*, Comst., with *Mytilaspis buzi*, Bouché. With respect to Prof. Comstock's name for the species, I note that in his Agr. Report,

1880, p. 324, the insect is described as *Mytilaspis* (?) *pandanni*, n. sp., and is said to have been collected upon *Pandannis*; while in the "Second Report on Scale Insects," 1883, p. 118, the name has been altered to *Mytilaspis pandani* (with one "n"), and is said to occur on *Pandanus*. The earlier name was presumably the result of a mistake in the name of the food-plant. Prof. Cockerell is responsible for the alteration in the generic name.

[In the Palm House *Licuala grandis*, *Calamnus Lewisianus*, G., and *Chrysalidocarpus lutescens*, Wendl., were dreadfully infested with this pest, which is the most difficult of all the *Diaspinæ*, in this country, to eradicate.—R. N.]

DIASPIS BOISDUVALII, Sign.—This was one of the most widely distributed Coccids in the plant-houses. I found it occurring upon the following plants, amongst others, *Heliconia metallica* (from Brazil), *Nannorhops Ritchiana* (from Afghanistan), *Æchmea mexicana* (from Mexico), *Pitcairnia bromeliæfolia* (Cuba), *P. latifolia* and *P. alta*, *Bactris acanthocarpa*, *Euterpe speciosa*. It appears to be particularly partial to monocotyledonous plants. The scales, ♂ and ♀, occurred on both surfaces of the leaves, and varied in character according to that of the surface upon which they were situated. Where there was an epidermal layer of fibrous or scurfy matter, the scales themselves were found to be similarly clothed. The natural home of the species is uncertain; it was originally described by Dr. Signoret from examples affecting orchids in plant-houses at the Luxembourg.

[In England palms are the favourite food-plant of this species, but at Kew I only found it upon *Cocos Romanzoffiana*, Ch.—R. N.]

CHIONASPIS ASPIDISTRÆ, Sign.—A few examples on *Cocos plumosa* (from Trinidad), the insects affecting both surfaces of the frond. The living ♀ insect was of a dull purple-red colour. Eggs and newly-hatched larvæ were present beneath the scale. The pellicles being very transparent, the darker body of the insect was visible through them. I found no ♂ scales. The same insect occurred upon *Heliconia metallica*.

LECANIUM HÆMISPHERICUM, Targ. Tozz.—I fail to find any good specific distinction between *L. hæmispæricum*, Targ. Tozz., *L. coffeæ*, Walk., and *L. filicum*, Boisd. Typical *hæmispæricum* appears to be the larger form of the three, and usually of a darker colour. *L. coffeæ* (as I know it from Ceylon) is of a brighter reddish tint, with more distinct dark margins. *L. filicum* seems to be a still smaller and slightly angular form occurring usually upon ferns. The derm-cells,

the legs and the antennal formulæ are identical in all three forms; and the marginal hairs in all are flattened and slightly dilated at the extremity (fig. 1). *Coffea* and *filicum* can scarcely rank as more than varieties of *hemisphæricum*. I note that Prof. Cockerell, in his recently published "Check-List of the *Coccidæ*" (Bulletin of the Illinois State Laboratory of Natural History, vol. iv, pp. 318—339), is of the same opinion as regards the first-named, and suggests the propriety of the second being in the same position. At Kew I find the typical form on *Cycas Jenkinsiana* (from India). The variety *coffea* (which Mr. Newstead informs me is new to our British lists) occurred on *Coffea liberica*, *Stangeria schizodon* (from Natal), *Eranthemum cinnabarinum*, *Olerodendron speciosum*, *Bowenia spectabilis* (from Queensland), and *Casimeroa edulis* (the Mexican apple). The dermal cells on the dried scales appear as closely studded paler dots on the darker ground. Var. *filicum* occurred on several species of fern, and on *Nepenthes Rafflesiana*.

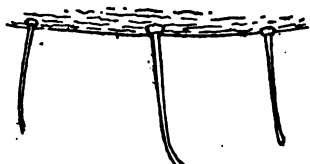


Fig. 1.

[Typical forms occurred on *Eugenia malaccensis*; var. *filicum*, Doug., on *Leucadendron argenteum*, and var. *coffea* on *Coffea arabica*.—R. N.]

LECANIUM HESPERIDUM, Linn.—I found this species upon both surfaces of leaves of *Bertolonia Marchandi*. The insects were ranged along the prominent nervures of the leaf. The adult females covered newly excluded larvæ. The same species occurred on *Lucuma multiflora* and *Dalbergia lanceolaria*. I did not notice it upon any citrus plants, where it might with reason have been expected.

[Also in the open air on *Hedera amurensis*, November, 1896.—R. N.]

LECANIUM LONGULUM, Doug.—Upon leaves and twigs of *Cassia fistula* (from India). I note that Mr. Douglas has also recorded this insect from Kew. His examples were taken upon *Averrhoa carambola* and *Spathophyllum blandum*.

LECANIUM NIGRUM, Nietn.—There were examples of this species upon leaves of *Heliconia metallica* (from Brazil). The colour of the mature ♀ varies considerably. It is as often a deep chestnut colour as black. I agree with Mr. Maskell in considering that *L. depressum*, Targ.-Tozz., and *L. begoniæ*, Doug., are identical with, or at the most, varieties of, Nietner's species.

LECANIUM OLEÆ, Bern.—Typical examples occurred rather plentifully upon plants of *Aralia elegantissima*. A few scales on *Oroton eluteria* (cascarilla bark, from W. Indies), though rather smaller and more rugose than the type, can hardly be separated from this species. They answer also to the description of *L. testudo*, Curt., as defined by Mr. Douglas from examples taken in Kew Gardens on *Brexia*. Mr. Douglas points out the similarity of the two species, and I note that Prof. Cockerell, in his recent Check-List, has classed *testudo* as a variety of *oleæ*. Mr. Douglas mentions that the chief apparent difference is that *oleæ* bears smaller white specks on the scale; but these specks being merely a waxy secretion, their comparative size cannot be considered of specific importance. Upon leaves of *Avicennia nitida* (the white mangrove, from Brazil) I found a still smaller form that I am unable to separate from the above species, and the same small form occurred on *Elæodendron orientale*, *Carissa spinarum*, and *Catesbæa spinosa*. This form has the white waxy flakes very prominent and conspicuous. These flakes are, I believe, remnants of an earlier test, which has become broken up and the parts separated by the growth of the insect. Consequently, in the large well-developed typical form they will be more widely separate and apparently smaller; while in the small stunted examples the separation between the parts is not so great, and, in comparison with the size of the insects, the specks appear large and prominent. Upon the "white mangrove" I found a few of the ♂ puparia. As is not unusual in the *Lecaniinæ*, examples of the male are not at all common. Dr. Signoret had seen only females, and Prof. Comstock states that he had failed to find any of the males in America. Dr. Antonio Berlese in his recent work (*Le Cocciniglie Italiane viventi sugli Agrumi*) figures the male puparium. The ♂ scales referred to above were all empty, except one, which covered a pale greenish pupa with dark brown, median, longitudinal stripe. The scale was of the usual form (fig. 2), colourless, transparent, glassy, studded with irregular waxy plates, as in the ♀, those on the median line being most defined and very prominent.

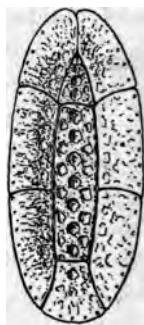


Fig. 2.

PULVINARIA FLOCCIFERA, Westwood.—Upon the leaves of two orchids, *Auguloea Clowesii* and *Lycaste Skinneri*—the insects apparently preferring these two species from amongst the many others in the house—I found numerous specimens of a *Pulvinaria* with a long flattish fluted

ovisac. From the external characters I supposed it to be *P. camellicola*, Sign. But a more careful examination showed the antennæ (fig. 3a) to be 8-jointed, which precludes this determination, *camellicola* being credited with six joints only, of which the 3rd is remarkably long. The antennal formula in the species under examination is 3, 2, 4 (1, 8), 5, 6, 7; the 4th joint without hairs. The marginal hairs of the body (fig. 3b) are flattened and divided at the tips, but lying edgewise to the plane of the body, they often appear to be simple and tapering. Mr. Newstead tells me that specimens from *Camellia* in his collection also prove upon examination to have 8-jointed antennæ. We are fortunately saved the necessity of erecting a new species for this insect, it having been already (as I am informed by Mr. Newstead) described and figured by Prof. Westwood (*Gardener's Chronicle*, 1870, p. 308, fig. 52) under the name of *Coccus flocciferus*. It is probable that the examples recorded by Mr. J. W. Douglas as occurring on the orchids *Oncidium papilio* and *Calanthe natalensis*, at Kew (*Ent. Mo. Mag.*, April, 1887, p. 243), and others from Exeter on *Camellia* (*Ent. Mo. Mag.*, September, 1886, p. 81), which were determined from external characters only, will be found to be this same species. It is, therefore, doubtful whether the true *P. camellicola* really occurs in the British Isles.

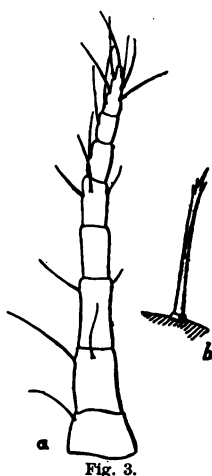


Fig. 3.

DACTYLOPIUS CITRI, Boisd.—This is almost an omnivorous species, and quite cosmopolitan in its range. I noted the insects in all stages upon fifty or more different plants at Kew.

[Mr. G. Nicholson, the Curator, has recently sent me leaves of *Hedera amurensis* infested with this species; and, as they were gathered from the outside of Museum No. 2, are of great interest, as being the first recorded occurrence of this pest in the open air in England. It is hoped the first hard frost will kill off the whole colony.—R. N.]

DACTYLOPIUS LONGISPINUS, Targ.-Tozz.—This species occurred on *Stangeria schizodon* (from Natal), *Flacourtia sepiaria* (from India), *Adiantum*, and several other plants. Mr. Newstead informs me that it has not previously been recorded from the British Isles. But there seems to be some confusion about the identity of the several species of *Dactylopius* that occur commonly in plant-houses. This is un-

doubtedly the insect described by Dr. Targioni-Tozzetti under the name of *D. longispinus*, but Dr. Signoret treated this name as a synonym of *D. adonidum*, Linn., and I note that Prof. Cockerell, in his "Check-List of *Coccidæ*," follows Signoret in this determination. There is, however, considerable doubt about the identity of Linné's species. The name *adonidum* has been frequently applied to the very common and widely distributed species now generally recognised as *D. citri*. It would seem advisable, therefore, to retain the name of *longispinus*, which has been in use for many years, to designate the species with very long waxy processes, of which the terminal pair are frequently longer than the body of the insect itself; *citri* being recognised by its stouter form, and the very short marginal processes. Dr. Antonio Berlese has pointed out many small structural differences between the two species.

ORTHEZIA INSIGNIS, Doug.—This species seems especially partial to plants belonging to the natural Order *Acanthaceæ*. The same fact was noticeable in Ceylon, where the insect became a serious pest upon ornamental plants in the Government Botanical Gardens at Peradeniya. It was particularly noticeable at Kew upon *Strobilanthes gossipinus* (an Indian plant), also upon *Manettia bicolor* (from Tropical America). I was told by the attendants that this insect was known amongst them by the name of "the Kew bug," and that constant attention was required to prevent its increase.

Bearsted, Maidstone :

September 15th, 1896.

ADDENDA BY R. NEWSTEAD.

In order to prevent the repetition of names, and to economize space, I have ventured to give, in the form of bracketted notes, a few remarks on the species enumerated in Mr. Green's interesting paper. I have now to add, as the result of my pleasant and profitable visit to the Royal Gardens, the following species as additional to the foregoing list:—

ASPIDIOTUS CYDONIÆ, Comstock; ♂ and ♀ scales.—Numerous on the dead wood projecting from the trunk of the large sugar palm (*Arenga saccharifera*, from the Malay Archipelago); but, judging from the appearance of the scales, the insects had long since been dead. They were badly parasitized, and attacked by fungi, which, together with the use of insecticides, had apparently destroyed the whole colony.

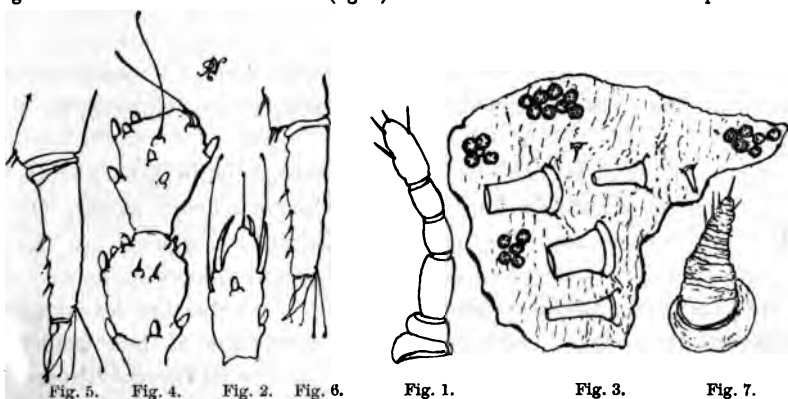
DIASPIS CALYPTROIDES, Costa, ♀.—The numerous white scales of this species were abundant on several species of *Cacti*; and for some unaccountable reason were crowded together, in favourite spots, in little masses five or six deep. This and the preceding species are new to Britain.

PARLATORIA PERGANDEI, var. **CROTONIS**, Cockerell; ♂ and ♀ scales.—Common on several species of croton.

LECANIUM PERFORATUM, Newstead, ♀.—Swarming on the *Caryota* and other palms; their flat shining bodies looking remarkably like detached fish-scales. Undoubtedly the species is partial to the above plants; but it also occurred freely on *Eugenia malaccensis*, *Diospyros*, sp. (Mauritius), and *Coccoloba*, sp.

PLANCHONIA (ASTEROLECANIUM) BAMBUSÆ, Boisd., ♀.—Very common on *Bambusa vulgaris*, and other species of bamboo, both upon the stems and leaves. Their presence is marked by small yellow stains on both sides of the infested leaf. I did not observe the ♂ in any stage.

COCCUS TOMENTOSUS, Lam.—♀ adult covered with, or resting upon, cottony material at gestation; colour, dark crimson; ovate; segmentation distinct. Antennæ (fig. 1) very short, tapering, scarcely so long as the tibia and tarsus together, of six joints; 1 very broad and flat, somewhat resembling a quoit; 2 often only indicated by a very thin strip of chitine; 3 longest; all the joints are widely separated, and the apical one has a few short hairs. Mentum monomerous; filaments short. Legs stout, strong, and chitinous; digitules simple. Anal orifice (ring), indicated by a lunular piece of chitine, is without the spiny hairs common to many genera of the *Coccidæ*. Dermis (fig. 3) above with numerous truncate spines of



varying sizes and length, and numbers of irregular groups of compound spinnerets, exactly corresponding to those one finds in the *Diaspinæ*; ventrally there are numbers of small isolated spinnerets and a few minute spines. Anal lobes perfectly

obsolete; their position is indicated by a couple of truncate spines, and within them a group of, usually, four compound spinnerets. Long., 2—2.75 mm.

♀, 2nd stage, more elongate than the adult, but in other respects it scarcely differs.

♂ dark crimson; has two very long white caudal filaments. Antennæ (fig. 4, 4th and 5th joint) of 10 joints, of these the 1st is the shortest; all, with the exception of the 1st, with several large, tuberculate, spines; joints 5—10 with two to three long, slender, knobbed hairs; last joint (fig. 2) with three long stout spines, in addition to the smaller ones. Legs with a two-jointed tarsus; the articulation of which is clearly visible when the tarsus is bent slightly upwards (fig. 5), but when it is curved inwards the joint appears as a narrow raised ring of chitine (fig. 6), and apparently fused.

Larva elliptical; colour dark crimson. Legs very long; digitules ordinary. Antennæ (fig. 7) of six joints. Mentum monomorous; unexpanded filaments much longer than the body. Anal orifice as in the adult ♀. Dorsum with three longitudinal rows of truncate spines; and there are spines of the same character at the margin.

Hab.: Royal Gardens, Kew; on *Opuntia fulgida*, recently imported from Arizona. At the time of my visit the adult ♀ were nearly all dead; but there were quantities of them, as also of the immature ♀; and I was fortunate in rearing half a dozen ♂. The larvæ simply swarmed, and were actively engaged passing up and down the long barbed spines of the food-plant, evidently enjoying the intense heat of the mid-day sun.

The constancy of 6-jointed antennæ, and the comparatively small size of the ♀ is very marked; for this reason I at first considered my examples as a distinct and undescribed var. Now, thanks to Mr. Cockerell, I have been able to examine a long series of *C. tomentosus*, which were collected by Dr. Dugès in Mexico, and find the number of antennal joints to vary; usually there are 7, but 6 joints are not infrequent; and small adult ♀ containing well formed larvæ are not rare, but the average size of the Mexican examples is much larger than the British.

C. confusus, Ckll., differs from the above, only, in having much larger groups of compound spinnerets, and longer truncate spines. Of the former those near the margin of abdominal segments are the largest, and consist of about 50 to 90 spinnerets, or more.

It may be convenient here to add that the cochineal of commerce (*C. cacti*, Lin., Sign., ♀) may be recognised from either of the above by its much larger size, and the total absence of dermal truncate spines. Signoret (Essai, p. 381) makes no mention of these latter, and I am therefore of opinion that that author had the same species under observation as myself.

The absence of anal lobes; the curious non-setiferous anal ring in all stages; the short degenerate antennæ; and grouped spinnerets; are common to all three species mentioned above; and may be considered the salient generic characters of the ♀.

I am inclined to think the two-jointed tarsus of the ♂ of more than specific value, and that it will be found to exist in all the species of this genus. Signoret makes no reference to such a character, and other authors have apparently overlooked it.

Chester: November, 1896.

P.S.—I have examined specimens of *Aspidiotus aloës*, Boisd., as recorded by Mr. Green, p. 69, and fail to separate them from typical *A. nerii*, Bouché.

Erratum.—p. 71, for *Lecanium hemisphæricum*, "var. *filicum*, Dougl.," read "var. *filicum*, Boisd."

March, 1897.

TEPHROSIA CREPUSCULARIA AND BIUNDULARIA.

BY JOHN E. ROBSON, F.E.S.

I refrained from replying earlier to my friend Mr. Barrett's comments in my last note, not that I was at all shaken in my opinion, but I had not seen Mrs. Bazett's specimens, and Mr. Barrett intimated that as I had not seen these, and others to which he referred, I was scarcely in a position to pass judgment. Yet I was not so ignorant as he assumed. I had carefully examined Mr. Tutt's lengthy series, not with a cursory glance at a Society's meeting, but at my leisure in his own house. I had seen a long row of the second brood of *crepuscularia*, bred by Mr. Henderson, who also sent me the females which deposited the eggs. I had further had considerably over thirty years' acquaintance with *biundularia* in our own woods.

Now, thanks to the great kindness of Mrs. Bazett, I have before me as I write the specimens which have revived this discussion. I have further had the great advantage of considerable correspondence with Entomologists who are familiar with these insects, and though I have not seen the foreign specimens which caused Mr. Barrett to suggest there was but one species, I venture to think I am in a fairly well-informed position for discussing the question.

I must plead guilty to carelessness in writing my former communication. I made Mr. Barrett say, "the second brood of *biundularia* were actually more tinged with brown than the *type*," when he really said, "than *the others*." I understood him to mean that the second brood of *biundularia* were browner than the first brood. Hence I suggested that if the grey second brood of *crepuscularia* were "obviously" *biundularia*, so we should say the (brown) second brood of *biundularia* were "obviously" *crepuscularia*. This, it appears, was not what Mr. Barrett meant, and it was the misunderstanding that led to the error.

But what does Mr. Barrett mean? He says that Mrs. Bazett's specimens, bred from undoubted *crepuscularia* ova, and emerging in July, are "obviously *biundularia*." Is this intended to mean that what we call *biundularia* are a second brood of what we call *crepuscularia*? The specimens on which the statement is founded are "not more than one half the size of the parents," and the parent *crepuscularia* are certainly as large as ordinary *biundularia*. But putting this aside, how can insects emerging in July be "obviously" a species which emerges two months earlier? How can we explain the appearance of *biundularia* in so many places where *crepuscularia* never occurs?

Mr. Barrett makes considerable use of my statement that I had "only once had a second brood of *biundularia* here." We are accustomed to call an autumn emergence a second brood. This was all I meant, but I should perhaps have been more explicit, and said, "I only once had *biundularia* emerge in autumn," and then but two or three out of a large brood. The fact, correctly stated, will not bear the inference Mr. Barrett draws from the words I used. I never saw *biundularia* in the woods in the autumn, but had I done so, I fail to see how that would have strengthened Mr. Barrett's position. He also refers to the date of some specimens taken by Mr. G. O. Day, of Knutsford, but whilst I admit the importance of dates in the controversy, the day of the month is of little consequence unless we know the year. 1893, when Mr. Day's early specimens were taken, was an excessively early season, spring insects were on the wing a full month before their usual time, and I know of other *biundularia* taken in March that year. Mr. Holland, of Reading, for instance, took one on March 26th.

To my thinking, this is all very much beside the mark. It is easy to understand slight irregularities in appearance, particularly with species emerging rather early in the year. With a cold February and March and a warm April, the last examples of the earlier species will scarcely be on the wing ere they will be joined by the first of the later species. That they do not mix and pair is clear from the fact that each still bears the same distinguishing characteristics as when they were first differentiated.

Much of the confusion in reference to these species arose from the nomenclature. Stainton called the early insect *laricaria*, and the later one *crepuscularia*. Newman called the early one *crepuscularia*, and the later one *biundularia*, and this crossing of names led to endless blunders, whilst, to make matters worse, Newman figured typical *biundularia* for *crepuscularia*, and gave a figure for *biundularia* which does not resemble the ordinary form of either species. It is much to be regretted that Stainton's names were not retained. Had we called the early species *laricaria*, it would have emphasized the preference this insect displays for larch woods, an important factor in the controversy. By this cross naming and figuring collectors were led astray, many tried to make both species out of the common one, without any wrong intent, and even yet *biundularia* is sent out for the rarer insect. But the better informed Lepidopterists now know the type forms of both, and if we take the Reading examples alone, as specimens from a district where both occur, they are abundantly distinct. Apart from the difference in colour, the second line in Mrs. Bazett's *crepuscularia* is very distinctly double, with a paler space between the lines, the outer line of the pair being in most cases as clear and well defined as the inner. The small second brood specimens, though

not brown like the earlier brood, still have this marking clearly double, and the outer line well defined. Only one of the *biundularia* has this outer line at all distinct, and this not nearly so much so as the least distinct of the others. But if there is not a guide enabling us always to separate the specimens, I must still demur to Mr. Barrett's conclusion. Will he "undertake always to separate the two species" in *C. russata* and *immanata*, in *A. tritici* and *aquilina*, or *tritici* and *cursoria* from the wing markings only, and many more might be named? Surely in these days of X rays we are not to assert that what we cannot see is not there. I may perhaps be allowed to point out another difference in Mrs. Bazett's series, and leave others to see if the distinction is constant. Melanic specimens of both species occur, and Mrs. Bazett has examples of both. In melanic *biundularia* the subterminal line is clearly and distinctly shown as a serrated white line on all wings. In her melanic *crepuscularia* the line is there, but not nearly so distinct, it is more like a series of short dashes than a continuous line. Mr. Barrett describes a melanic specimen in Mr. Day's series, of which he says it is "smoky-black, without markings, except that the subterminal white line is distinct on all the wings," thus agreeing with Mrs. Bazett's examples of the same form.

There is much more that could be said, but my remarks have already reached an inordinate length, and I have not been able to condense them.

Hartlepool: *February 13th, 1897.*

[This controversy must now cease. It can be re-opened at a future date should any very important new facts come to hand.—Eds.]

TINEA COCHYLIDELLA, STN., AN ABERRATION OF *T. RURICOLELLA*, STN.

BY EUSTACE E. BANKES, M.A., F.E.S.

Among the original types of *Tineina* in the collection formed by Mr. J. W. Douglas, which, through the hospitality of the owner, Mr. Philip B. Mason, I have been able to examine at leisure, and about which I hope to contribute future notes, one of the most interesting is the still unique specimen described by Stainton in *Ins. Brit. Lep. Tin.*, p. 32 (1854), as *Tinea cochylidella*, *n. sp.* Stainton there gives the month of capture as "June," but the reference number "4758" on the pin of the insect is shown by Mr. Douglas' diary to mean that it was taken at Sanderstead by himself on July 7th, 1852. As the result of a very careful examination made last spring, I have no hesitation in saying that it is a strongly aberrant specimen of *T. ruricolella*, Stn., and that the synonymy should therefore be:—

Tinea ruricolella, Stn., *Syst. Cat.*, p. 7 (1849).

ab. *cochylidella*, Stn., *I. B. Lep. Tin.*, p. 32 (1854).

The moth, which is a male in fine condition, agrees absolutely in

size and shape with *uricolella*, and the ground-colour is similar though a trifle paler, but all the markings are very indistinct and ill-defined. One can, however, trace the pale interrupted plical spot, the dark costal bar, the pale discal spot beyond the middle, and the row of dark spots at the base of the apical fringes, which are all present in *uricolella*, and the head and hind-wings agree exactly with those of that species. The oblique dark plical spot differs from that in typical *uricolella* and *cloacella*, being continued to the dorsal margin instead of ending abruptly before it, but the shape of this spot is very variable in both species, and individuals occur in which it reaches the margin. The cilia, although showing a dark apical line as usual, are unicolorous pale greyish-ochreous instead of being chequered with fuscous, as in ordinary *uricolella*, but this is only to be expected in an aberration in which all the markings tend to become obsolete.

It will be noticed that I treat *uricolella*, Stn., as distinct from *cloacella*, Hw., whereas some authors, including Mr. Meyrick in his "Handbook," sink the former as a variety of the latter: my reason is that, after studying these forms, I am by no means convinced of their identity, but am inclined to think that Stainton was right in separating them, and would lay stress as he does (Man., ii, 292) not only on the difference in the markings, but also on the much neater and smoother appearance of *uricolella* as compared with any of the numerous known varieties of *cloacella*. I have never been so fortunate as to meet with genuine *uricolella* in nature, but the late Mr. W. Machin, who, in 1893, bred a few specimens of it, without any *cloacella*, from fungus collected in Swanscombe Wood, Kent, and sent them to me for determination, was strongly of opinion that they represented a species truly distinct from the latter.

The Rectory, Corfe Castle :

February 10th, 1897.

HINTS ON COLLECTING ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F. L. S.

(Continued from page 35).

Amongst the early spring Aculeates I ought to have mentioned the Humble Bees and their Cuckoos, and the Wasps. Of all these, the females hibernate in an impregnated condition and come out on the first suitable spring days to recommence work. Humble Bees may be found at this season either buzzing about banks looking for suitable localities for their nests, or at the flowers of willows, almonds, furze

or, one may say, of almost any flowering plants. Their Cuckboos have much the same habits, only they do not store pollen. It may be worth while to remind collectors that early in the spring no worker Humble Bees are about, so that small specimens looking like workers of *terrestris* or *hortorum* will probably prove to be females of *Jonellus* or *soroensis*, species which are rare with many collectors, probably because they are overlooked. Wasps have much the same habits as Humble Bees, and every one knows that Queen Wasps are amongst the earliest insects on the wing. Even Queen Wasps should be carefully examined, as the rare *V. austriaca* may easily pass unnoticed. Any wasp that has the eyes touching the mandibles and the tibiae with projecting hairs, may be set down for certain as the rarity.

Towards the end of April and during May a good many fresh species of Aculeates begin to appear. Of course a great deal depends on the "earliness" or "lateness" of the season as to times of appearance, but in May, if the weather be bright, one will probably find some of the earlier Fossorials, especially amongst genera such as *Pemphredon*, *Diodontus*, *Passalæcus*, *Crabro*, &c., which begin to appear now, although they may be found all through the summer. Many of these make their burrows in stems of brambles and other plants, or in dead stumps. They require very careful collecting, as, owing to the general resemblance of the species to each other, it is often impossible to feel certain what species one may be bottling, and it is very annoying on one's return home to find a specimen of a rarity amongst a lot of common species without having the slightest idea where it was taken. I always think it is worth while to examine a specimen of any obscure species which one may notice frequenting a definite locality, at once, as it is quite easy to hold a living specimen in the left hand while one examines it with a lens in the right, and this proceeding often saves the lives of many specimens of common species and enables one to secure rarities which might otherwise pass unnoticed. The rarities to be looked for in the *Pemphredon* group are *P. (Ceratophorus) morio*, and *P. Wesmaeli*. The former has been till lately one of our very rarest *Hymenoptera*, but it has been taken in the last few years at Blackheath by Mr. Beaumont, and at Bury St. Edmunds by Mr. Tuck. It may be recognised by the short stout tubercle on the face between the eyes. The latter is very like the commoner *Shuckardi*, but has a larger head and a more strongly and coarsely punctured mesonotum, and in the ♀ a deeply emarginate clypeus. Most of the species of this genus are fond of basking in the sun on leaves of brambles, or in gardens on currants, gooseberries or

Jerusalem artichokes, a habit common to many *Andrenas* and other *Hymenoptera*. The species of *Diodontus* frequent banks and may be often found in great numbers flying up and down in front of their burrows. *D. minutus* is common everywhere, and as it is the only species with yellow mandibles it may be recognised at once, the other two with black mandibles are less abundant. Various species of *Crabro* also appear in May; these may be found in similar localities to *Pemphredon*, &c., the males often basking on leaves, the females either burrowing in wood or banks. The flowers of umbelliferous plants are favorite resorts of species of this genus and of many other genera of the Fossorials; they frequent these in order to catch small *Diptera*, &c., with which they provision their cells. The species of *Passalæcus* are generally to be captured in bramble flowers or on or near palings. The various species of ants are getting active during this month, and a few species of *Pompilus* and *Priocnemis* are to be found. This year (1897) *Pompilus viaticus* was found as early as March 2nd. Gate posts and old stumps are likely localities at this time of year; *Sapyga quinquepunctata* frequents them in many places, and the rare *S. clavicornis* should be looked for, but as this appears to be chiefly a midland species it would more probably be found in June. It is a narrower and more elegantly shaped insect than *quinquepunctata*, has longer, thinner, and more suddenly clubbed antennæ, and both sexes have the abdomen entirely black, with the exception of the pale lateral spots, which are yellow in *clavicornis*, whereas in *quinquepunctata* they are creamy-white. During May species of *Gorytes* and *Nysson* are also to be found. Among the *Anthophila*, females of *Sphecodes* and *Halictus* are generally abundant and in good condition, and may be found either round their burrows in banks or on flowers, especially the yellow flowers of *Compositæ*, but *H. sexnotatus*, one of our rarest species, I have only taken on *Scrophularia* and bryony. Should any collector be lucky enough to meet with a ♂ *Sphecodes* in spring it will probably prove to be the rare *S. rubicundus* recently introduced to our list by Mr. F. L. Sladen. So far as is known this is the only species of the genus in this country that has a spring male. *Prosopis* sometimes appears in May, but the majority of its species occur in June and July; at this time of the year the flowers of furze are attractive to many species of *Andrena*, and among them *A. Wilkella* and *similis*, which, as a rule, appear in May. The rare *A. bucephala* and its rarer inquiline *Nomada lateralis* should be looked for on blackthorn flowers, both have been found on Boxhill by Mr. Beaumont. The ♂ of the *Andrena* may be known by

its very large head; the *Nomada* from all our other species except *borealis* by its entirely black thorax and black scape of the antennæ. The still rarer *Andrena ferox* is probably to be found late in May or early in June, and *A. chrysosceles*, *nana*, *fasciata*, *humilis*, *labialis*, *fulvago* and *cingulata* generally appear during this month. *Chrysosceles* and *nana* usually on *Umbellifera*; *fasciata*, *humilis* and *labialis* on dandelions; *angustior* on *Hieracium pilosella* or *Ranunculus*, *cingulata* on *Veronica chamædrys*. *Nomada ochrostoma*, the messmate of *A. labialis* and *Wilkella*, *N. flavoguttata* of *nana* and *N. ferruginata* of *fulvescens* appear soon after their hosts. An occasional *Cælioxyx* or *Megachile* may occur, and a few of the *Osmias* and *Anthophora retusa*, this last very closely resembles *pilipes*, especially in the ♀, but may be known by its pale calcaria and by the rather shorter pubescence; the ♂ is more brightly coloured as a rule than British specimens of *pilipes*, and may be known at once from them by the absence of the very long hairs on the intermediate joints of the middle tarsi. The two species of *Melecta* known at once from all our other long tongued bees by their black bodies with snowy-white spots of pubescence on the sides of each segment, are now about, occurring round the burrows of *Anthophora*; *M. armata* is the inquiline of *A. pilipes*, *M. luctuosa* of *retusa*. The latter species is by far the rarer of the two and may be known by the somewhat square, not punctiform, spots of white pubescence on the apical segments. Most of the species of *Odynerus* appear in May; some of these are rare, and are only known from a very few localities. *O. lœvipes* burrows in bramble stems and therefore should be looked for where the plant abounds; *O. reniformis* has as yet only occurred at Chobham and near Virginia Water Station, on sandy spots, making a tubular entrance to its nest which projects about an inch above the soil, this tube should betray its whereabouts at once, but it is probably easily washed away by rain. *O. spinipes*, which is a far commoner insect, makes curved tubes of a somewhat similar nature in banks. *O. crassicornis* is one of the rarest species, but so little is known about it that it can only be kept in mind and looked for generally, it is about the size of a ♂ *antilope*, but belongs to the section which has the first segment of the abdomen longitudinally impressed towards the apex.

In May and early June the best localities for collectors of *Aculeata* are sheltered lanes and the outskirts of woods where flowers abound, banks, sand pits, &c., with a southerly aspect, dandelions and other yellow composite flowers, *Umbellifera*, blackthorn and

whitethorn flowers, furze and *Labiates*. Buttercups occasionally attract good species, notably *Andrena angustior* and some *Halicti*. Old tree trunks, gate posts, &c., should be watched; even brick walls, and certainly stone ones, when the sun is on them, afford possibilities of the chase, as species of *Osmia*, *Odynerus*, and even *Prosopis* sometimes make their cells in their crevices. The species which inhabit bramble stems mostly appear in May, and those who have collected pierced stems during the winter will do well to expose them now to the sun. One year I collected a very large number and tied a small muslin bag over the end of each. I cannot say that the result was encouraging, but a great number of *Pemphredon lethifer* appeared and a great many parasitic *Ichneumonidæ*, a few *Crabros* and a few species of *Passalæcus gracilis*. Notwithstanding this poor result I think it is a method quite worth following up, especially for any one who has time to put the stems out in the sun and see that they are not exposed for too long; I feel sure that I killed a great many of the inmates of mine by putting them in a conservatory, where the sun simply dried them up. Frequently full fed larvæ will live on to the second year, so that it must not be taken for granted that everything has emerged from the stems because the usual time for emergence has passed. After the middle of June it is well to cut open the sticks and see if anything is left. Some collectors extract the larvæ and pupæ and breed them in glass tubes; I have never tried this, but I believe the result has been found satisfactory.

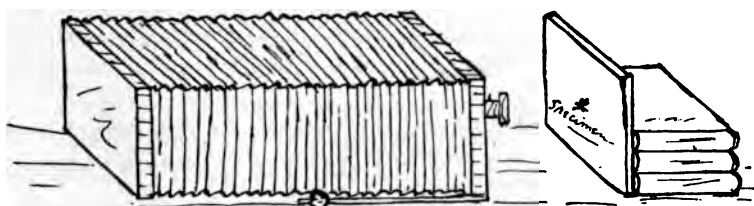
(To be continued).

THE DIRECT PHOTOGRAPHIC ENLARGEMENT OF ENTOMOLOGICAL SPECIMENS.

BY T. A. GERALD STRICKLAND, F.E.S.

As I have been doing some enlargements of *Coleoptera* lately, *not minute* insects suitable for photo-micrography, but fair sized ones, I think perhaps Entomologists, who have some slight knowledge of photography, may like to have a few hints on the *direct* enlargement of insects generally. When I say *direct*, I mean that the enlargements are made *direct* in the camera, *without* the use of an enlarging lantern or smaller negatives. Any sized camera will *do*, *if the stretch of bellows is long enough*; but, personally, I use a 12×10 camera, and a 7½ in. × 5 in. lens, of about 4½ in. focus. The specimen to be photographed is pinned in the centre of an easel (a drawing block propped up with books does nicely), and placed, in a good light, exactly in the *front* of the lens, as in the diagram.

It is necessary that the specimen should be *exactly* opposite the centre of, and parallel to, the lens, otherwise the photographic result



will be distorted by violent perspective. I rack the camera out *nearly* as far as it will go, and then move it further from, or nearer to, the object, till I get it *roughly* in focus, finishing off with the rack and pinion. Use the largest aperture of the lens to focus with, and then stop down to get the necessary sharpness. This arrangement is simple and excellent, *unless* you wish to enlarge to scale, when, of course, more care must be used, such as measuring the image on the focussing screen, &c. With F45 stop, and an ordinary rapidity isochromatic dry plate, I find 30 minutes' exposure, in a large bay window, about right for a dark coloured beetle. I give this time merely as a rough guide, as, of course, exposure depends so much on the actinic power of the illuminant, and the colour of the specimen. At night, with the object lighted with lamps, the exposure would probably be treble or more. If, after all due care has been exercised with regard to the lighting, you still have slight shadows, they can be blocked out from the negative with ordinary sepia (moist water colour) thinned to the consistency of cream with black writing ink, and applied carefully with a camel's hair pencil.

When I wish not to enlarge, but to photograph an insect *natural size*, I proceed as follows:—Say the camera we are using is what is known as a $\frac{1}{2}$ plate, cut a sheet of white card exactly the size of the plate, in this case, $6\frac{1}{2}$ in. \times $4\frac{1}{2}$ in., and place it opposite the lens (as the drawing block is placed for enlarging), and focus it till it *precisely fills* the ground glass or focussing screen. On pinning the insect in the *centre* of the card it will be found, on the screen, to be practically the natural size. This dodge saves measuring, or any trouble of that kind. I generally print my results on gelatino-chloride paper, commonly known as P.O.P., matt or glossy, but as they are enlarged *negatives*, any printing process will suit.

Lantern slides can, of course, be made from the negatives by reduction or contact with little trouble. I usually glaze my prints, as, though perhaps not artistic, it brings out the *detail*, which is what we

require for *this* kind of work. I feel sure that any Entomologist that takes up this branch of photography will find it of great, and increasing, interest.

Oakleigh, near Ascot, Berks :

February, 1897.

[Mr. Strickland has submitted to us the photograph of a beetle enlarged about four diameters by this simple process. It is perfectly free from shadow, and the details are brought out in a remarkably clear manner.—Eus.]

COLEOPTERA IN A BAG OF SUFFOLK FLUVIAL REJECTAMENTA.

BY CLAUDE MORLEY, F.E.S., &c.

In Stephens' "Mandibulata" we often come across the term, "In a flood, Suffolk, Kirby, MSS." The Rev. W. Kirby, F.R.S., appears to have worked the country between Ipswich and Barham very thoroughly in and about 1804, and an account of the contents of a bag of refuse collected, perhaps, on the very spot where he took his nearly a century ago, will be interesting, especially since, I believe, such a haul as two dozen *Trachys troglodytes* has not been reported for many years, though Mr. Saunders met with the species at Lowestoft about 1865.* There have been considerable floods here, as elsewhere, during the early spring, and quite a quantity of *débris* strewed the water-meadows on either side the river Gipping on February 9th, when I filled a bag (10×22 in.) from one particular heap, and took in it 152 species, of which the following may be worth quoting:—*Metabletus truncatellus*, *Helophorus affinis* and *nubilus*, *Ilyobates forticornis* (one only), *Homalota angustula*, *fungi*, v. *clientula*, *vicina*, *triangulum* (several), *depressa*, &c., *H. analis* was present in enormous numbers, the bag must have contained several thousands, *Falagria obscura*, *Oligota atomaria* (not uncommon), *Hygronoma dimidiata* (four or five), *Conurus lividus* and *immaculatus*, *Philonthus sanguinolentus*, *ebeninus*, &c., *Medon melanocephalus*, *Stillicus affinis*, *Stenus circularis* (one only), *declaratus*, *pusillus*, &c., *Trogophlæus corticinus* and *elongatulus*, *Homalium oxyacanthæ*, *Tychus niger* (very common), *Pselaphus Heisei*, *Scydmaenus collaris*, *Clambus armadillo*, *Choleva cisteloides*, *Corylophus cassidioides*, *Scymnus frontalis*, *Psammæchus bipunctatus* (common), *Atomaria atricapilla*, *mesomelas*, *nana*, *analis*, *pusilla*, *fuscata*, and *ruficornis*, *Ephistemus gyrinoides* (rare hereabouts), *Simplocaria semistriata*, *Parnus auriculatus*, *Aphanisticus*

* Cf. Ent. Ann., 1865, p. 51.

pusillus (1), *Trachys troglodytes* (23), *Galeruca tenella*, *Prasocuris beccabungæ*, *Aphthona cyanella*, *Cassida sanguinolenta* (1), *Phyllotreta brassicæ* (common), *Apion tenue*, &c., *Strophosomus faber*, *Brachysomus echinatus*, *Alophus triguttatus* (1), *Sitones crinitus*, &c., *Tychius tomentosus* ? (three or four), *Cœliodes fuliginosus* (several), &c. &c.

A day or two ago I brought home another bag full, but only found three more of the *Trachys*, and added *Bembidium gilvipes*, *Othius melanocephalus*, and another *Cassida sanguinolenta*.

Everton House, Ipswich :

March 10th, 1897.

Morning collecting around the electric lamps.—The illumination of Kingston-on-Thames by the electric light about three years ago has made this district a most valuable one for the collector of moths. Night time is considered by the majority of collectors to be the best ; but having worked the lamps successfully in the mornings for three years, I may safely say that this is the better plan. It has many advantages, and the only disadvantage that I have found is that it entails early rising. From 4 to 6 a.m. is the best time, after this there are too many interruptions from the men employed by the Corporation to sweep the roads ; in so doing they sweep away many of the finest moths, which generally rest in the gutter.

For collecting implements you will require a long bamboo fishing rod and a strong cyanide bottle.

The *modus operandi* is very different from that employed by those who collect at night time. Starting at the first lamp in the street, you look carefully to see if there are any specimens asleep on the lamp itself ; if there are, touch them slightly with the rod, and they will flutter quietly to the ground without attempting to fly away. Having bottled these you look carefully on the ground, shop fronts, pavement, or any wood or stone in the neighbourhood of the lamp, and you will almost be sure to find a few more specimens ; indeed, some moths are not to be found on the lamps at all, such as the two "thorns," *Ennomos tiliaria* and *fuscantaria*, and the "Sallow" *Xanthia cerago*. When first I started collecting, I used simply to look on the lamps and ignore the shop fronts, &c. ; I thus used probably to miss a good many which I should otherwise have taken.

The following is a list of the chief moths I have taken during the past three years :—*Cossus ligniperda*, only one specimen. *Sphinx ligustri*, one. *Smerinthus ocellatus*, *S. populi*, *S. tilia*, were very common ; indeed, the hawk moths were very well represented. *Hepialus lupulinus*, *Arctia Caja*, *Spilosoma lubricipeda*, *Rumia cratagata*, were in countless numbers. *Selenia illunaria*, *Odontoptera bidentata*, *Ennomos tiliaria*, *E. fuscantaria*, *Phigalia pilosaria*, *Biston betularia*, were moderately common. *Hemerophila abruptaria* was very common. Of *Boarmia repandata* one was taken. *Abraxas grossulariata* was common, but rather worn. *Hibernia leucophaea* as usual was common, and there were some good varieties. *Dicranura furcula*, one was taken, rather worn ; *D. vinula* was very common, and I took some fine specimens. *Pygæa bucephala* was in fine condition. *Notodonta camelina* one

was taken; *N. dictæa* was in great numbers, but there were more females than males! *N. dictæoides*, two were taken; *N. ziczac* one. *Acronycta psi*, rather common. *Leucania pallens*, six taken. *Calamia lutosa*, eight were taken in good condition. *Axylia putris*, one was taken. *Zeuzera asculi*, two were taken. *Mamestra brassica* was swarming. *Grammesia trilinea*, three or four in good condition. *Agrotis segetum*, common. *Xanthia cerago*, *X. gilvago*, rather common. *Phlogophora meticulosa*, swarming in countless numbers, some lamps were covered with them. *Euplexia lucipara*, two or three were taken. *Plusia gamma* was common, but rather hard to capture, as it generally flew away when touched. *Catocala nupta* was common, but most of the specimens were badly battered. *Anchocelis litura*, common; *A. pistacina*, very common in the roads, hiding under stones, paper, &c. *Polia flavicincta*, two specimens. *Hadena chenopodii*, common on the globes.

From the above list it appears that this method of taking moths is far superior to that of going at night time, when you have to get a long net and work away for hours sometimes for a single moth; and you always have a crowd of urchins following you wherever you go, whereas, by going in the morning you escape these troubles.—BERTEAM G. COOPER, Tiffin's School, Kingston-on-Thames: Feb., 1897.

[Our correspondent is a lad 15 years of age, and the above was embodied in a paper read at the Natural History Society of the School. His energy and industry are highly commendable.—EDS.].

Note on the food of Bucculatrix artemisiæ, H.-S., in Britain.—It may be within the remembrance of some of your readers that in these pages (vol iv, first series, p. 36) I added to our fauna a new *Bucculatrix*, *B. artemisiæ* (or *artemisiella*), of which unfortunately I secured only a single specimen, and, to my regret, the species has not since been taken in this country. It is with a view to inducing some of your readers to look for the insect that these few lines are penned. On the continent, the food of this *Bucculatrix* is *Artemisia campestris*, but my larva was taken on a yarrow leaf, which much perplexed Mr. Stainton, who asked (Annual for 1870, p. 159): "Is it possible that this insect (*artemisiæ*) can be an extreme aberration of *crisatella*, Z.?" But, as I told my friend at the time, *Artemisia vulgaris* (mugwort) was common enough in the locality in which the capture was made, and as there was a gale from the S.W. on the occasion, it might easily have been blown from a neighbouring plant of mugwort. Then, again, I do not think *B. artemisiæ* can have anything to do with *crisatella*, for the reasons that the larva, from the first brood, of the latter is green, and full-fed at the beginning of May, whereas that of the former was, so far as my memory serves, whitish or drab, and it did not pupate till the middle of June.

There is yet, however, the possibility that *B. artemisiæ* may really feed on both yarrow and *Artemisia*, for which we have a precedent in the case of *Eupithecia absynthiata* and *succenturiata*, which will eat indiscriminately the flowers of either plant; or, again, it may here feed on *Achillea*, while abroad it affects *Artemisia*, just as the opposite is stated to occur with *Phorodesma smaragdaria*. Still, it is my firm belief that the occurrence of my larva upon yarrow was purely accidental, and that the species will be found upon *Artemisia vulgaris*, if sought for between the beginning and middle of June on the south coast. Of course, it should also be

looked for on *Artemisia campestris*, a much scarcer plant in this country, the chief habitat of which seems to be dry sandy heaths in Norfolk and Suffolk, especially in the neighbourhood of Thetford and Bury.—H. G. KNAGGS, Folkestone: *February*, 1897.

Sericoris palustrana in *Durham*.—When collecting in a large wood in a western portion of this county on May 25th, 1896, I was fortunate in meeting with this species in considerable numbers; it occurred upon a dry hill-side amongst stunted fir trees, flying up from the grass—altitude probably 500 ft. above sea level. It may be well to mention that, although the hill-side was dry, there was marshy ground both on the top and at the bottom of it, but no specimen was found on the top part, and very few on the marshy portion below. I have gone carefully through the late Mr. Sang's diary (which is in my possession) and cannot find any record of the species, although he had been in the habit of collecting in this part of the county; probably he had never been there at the right time.

My friend, Mr. B. A. Bower, of Lee, identified the species for me, but at his suggestion I sent specimens to Lord Walsingham, who confirmed his identification. With the exception of one specimen (*vide* Ent. Mo. Mag., 2nd series, vol. v, p. 50), it had not been recorded for England.—J. GARDNER, Hartlepool: *Feb. 25th*, 1897.

Agrotis cinerea in *Worcestershire*.—On May 17th last, while collecting in Wyre Forest, a moth came to my trap which, although obviously one of the *Agrotidæ*, I was unable to name, and I have only recently made the interesting discovery that my capture is *Agrotis cinerea*. It is much larger than usual English specimens, and of quite a different colour, which I may best describe as reddish-brown, with umber-brown markings. The reniform spot is very dark and conspicuous. I may mention that I have referred the specimen to Mr. Barrett, who unhesitatingly pronounces it to be *A. cinerea*. Having no knowledge of any previous Worcestershire specimens, I venture to place the capture on record.—GEORGE W. WYNN, 192, Lozells Road, Birmingham: *March*, 1897.

Bees in February, 1897.—On February 26th I saw a ♂ *Andrena Gwynana* in my garden, and, as the next morning was particularly warm and sunny, I visited a favourite sandy bank within a few minutes' walk, and secured early specimens of the following bees:—*A. Gwynana*, both sexes (abundant), *A. Clarkella*, ♀, *A. thoracica*, ♂ (two specimens, one exceptionally large and fine, the other exceedingly small), *A. minutula*, ♂, *Halictus minutissimus*, ♀. *Anthophora pilipes*, ♂, was also out, and the workers of *Lasius niger* were running about busily in the sand.

Six species of British bees all out together in February must surely be a "record."—F. D. MORICE, Woking: *March*, 1897.

Andrena angustior, Kirby, ♂, with 12-jointed antennæ.—In looking over some *Andrenas* that I took six or seven years ago in Warwickshire, I have come across a very curious specimen of *Andrena angustior*. It is certainly a ♂, for I have extracted the armature and the hidden ventral segments; but the antennæ resemble those of a ♀, being both 12-jointed. Mr. Saunders, as well as myself, has examined

the insect, and there seems no doubt that it is a genuine monstrosity. It is most unusually large for a ♂ *angustior*; but, except the antennæ, its structure seems perfectly normal.—In.

Notes on Diptera taken in 1896.—With the exception of a fortnight at Bournemouth, my collecting was confined to my own garden and neighbourhood (being unable through ill-health to visit my favourite localities); nevertheless, several interesting species were taken, a few of which are additions to the Midlands.

Merodon equestris—not uncommon in my garden, May 30th. *Syrphus later-narius*—this usually rare insect was taken freely on the morning of July 5th, mostly males; at the same time, *Chrysogaster splendida* (1). *Arctophila mussitans*—three fine specimens in the park. *Chyliza leptogaster* (1), *Trepthitis miliaria*—both taken in my garden, and are additions to the district. *Acidia lychnidis*—common in the garden. *Scellus notatus*—one ♂ (garden), first time in this district; as I had only previously taken ♀s (Weymouth) I was pleased to meet with it. *Erigone vagans*—common in the park on pine needles. *Mycophaga fungorum*—occurred both in the house and garden. *Tetanocera olens*—very common, crawling over raspberry leaves covered with honeydew. *Ditomyia ferruginea*—one specimen taken in 1895 undoubtedly represents Walker's species, and this year I captured a ♀, all black, which may prove to be a new species; hardly any Dipterists seem to have met with *Ditomyia* in this country. *Limnobia nitida*—this is recorded for the first time from Sutton Park; it occurred freely on September 6th and 7th amongst broom bushes, but was very difficult to capture, owing to its habit of crawling right into the centre of the bushes, and very seldom taking flight; In other localities I have taken this species in May, so probably this was a second brood.

The following were captured at Bournemouth:—*Geranomyia unicolor*, 8 specimens of this delicate "daddy" on the pier; *Miltogramma conica*, and *punctata* (12); *Scopolia carbonaria*; *Myopa fasciata* (3); *Syrphus nitens* (1); *Oncomyia atra*; *Xanthogramma ornata* (4); *Eutolamus trigonus*; *Ensina sonchi*. At Christchurch: *Prosenia siberita* and *Idia lunata*, the last named being in the reputed species in Mr. Verrall's list.—RALPH C. BRADLEY, Sutton Coldfield: February, 1897.

Metriocnemus fuscipes, Mg.: a correction.—It would appear that among the larvæ of this species taken (ante p. 49) were some of a *Ceratopogon*, and it is to this latter, and not to *M. fuscipes*, that the pupæ figured belong. Baron Osten Sacken, who called my attention to the error, thinks they might be *C. gemiculatus*, Guér. (= *C. bipunctatus*, L.), but Mr. Verrall thinks they approach, though are probably distinct from, *C. piceus*, Wtz. I sent Mr. Theobald, at the time, specimens of both the above species, which unfortunately were damaged in transit, but I have now posted him others, which will, I hope, prove more satisfactory. Mr. Verrall adds that the *Ceratopogon* is quite distinct from *bipunctatus*, L., as indeed appears to be the case, since neither the figure of the larva nor pupa in Mr. Theobald's "British Flies," is like those taken by myself.—CLAUDE MORLEY, Everton House, Ipswich: March, 1897.

Cryptcephalus parvulus, Müll. (*flavilabris*, Fabr.).—Mr. W. H. Bennett, of Hastings, has recently sent me for examination a male example of an interesting

variety of this species, one of several found by himself and Mr. Donisthorpe, on birch, at Battle, Sussex, in August, 1895. This insect is entirely black above, with the sides and under surface bluish-violaceous. It is the *C. barbarea* of Stephens, and possibly the var. *c* of *C. flavilabris*, Gyllenhal (Fauna Suecica, iii, p. 623)—“supra niger, subtus nigro-cæruleus;” *C. flavilabris*, Gyll. (nec Fabr.), is, however, treated by Weise as synonymous with *C. cærulescens*, Sahlb., which has not been recorded from Britain. The present insect has the seriate punctures on the elytra very coarse and transverse in shape, making the interstices appear transversely wrinkled. The trochanters are testaceous. Gyllenhal queries his var. *c* of *C. flavilabris* as being the *C. barbarea* of Linnæus and Marsham; but, according to recent writers, *C. barbarea*, L., is a black variety of *C. 10-maculatus*, L. (= *10-punctatus*, L.). Mr. Bennett informs me that he has taken the ordinary form of *C. parvulus*, Müll., in the same wood, but not in company with the black variety. Stephens, misled by the name, gives “barberry” as the food-plant.—G. C. CHAMPION, Horsell, Woking: March 12th, 1897.

Coleoptera in Richmond Park, &c.—I met with the following *Coleoptera* in Richmond Park in June last:—*Epipeda plana*, *Bolitochara bella* and *B. lucida*, *Mycetoporus lucidus*, *Homalium oxyacantha*, *Lathrimæum atrocephalum*. From a rotten beech stump I obtained *Euplectus nanus* and *E. signatus*, *Liodes humeralis* and *L. orbicularis*, and from old trees in different parts of the Park, *Anobium denticolle* (2), *Anitys rubens* (dead specimens only), *Dorcatoma chrysomelina*, *Aspidiphorus orbiculatus*, *Mycetophagus piceus* and *M. quadripustulatus*, and a single specimen of the very rare *Scaptia fuscula*. At Claygate I found *Megatoma undata* on an old willow, and at Leith Hill, *Elater balteatus*, *Ceuthorrhynchus alliarie* and *Cænopsis Waltoni*.—W. H. BENNETT, Hastings: March, 1897.

Neoclytus caprea, Say, and *N. erythrocephalus*, F., two North American Longicorns bred in this country.—While cutting up last January an especially fine ash trunk for the use of the wheelwrights employed by Messrs. Bass and Co., the workmen found numerous larvæ and some fully grown specimens of *Neoclytus caprea*, Say, together with a pair of *N. erythrocephalus*, F. I made particular enquiries, and found that, without doubt, the tree had grown at Carrick-on-Suir. How this Irish tree became infested with these two species of North American Longicorns I am unable to say, but both larvæ and beetles were lively enough when brought to me. I have to thank Mr. Champion for their identification.—PHILIP B. MASON, Trent House, Burton-on-Trent: March 9th, 1897.

The sale of the Sallé collections at Paris on February 25th to 27th, 1897.—The late M. Sallé was always specially interested in the *Coleoptera* from different parts of America, and his boxes comprised several separate collections, viz., (1) from North America, (2) Central America, (3) the Antilles, (4) Venezuela, (5) other parts of South America. The North American collection was relatively the most important: the *Cicindelidæ* and *Elateridæ* became the property of M. Fleutiaux; the *Staphylinidæ*, *Clavicorns*, *Lucanidæ* and *Coprophaga* passed into various hands; the other Families were bought by M. R. Oberthür. The original collection from Central America was acquired long since by Messrs. Godman and Salvin for the “Biologia,” but M. Sallé had replaced it by means of duplicates and new acquisi-

tions. Thus to some extent it was of less interest, but it, nevertheless, contained some great rarities, such as *Pantodinus Klugii*, Burm., ♂, from Guatemala, a superb series of *Zopherus*, &c. M. Oberthür obtained the *Carabidæ*, *Rutelidæ*, *Dynastidæ*, *Cetoniidæ*, and *Tenebrionidæ*. The Longicorns were bought by M. Argod. The entire collection from the Antilles, remarkable for its Longicorns (e. g., *Solenoptera*), and its *Curculionidæ* (*Diaprepes*, *Prepodes*, *Lachnopus*) now belong to M. Oberthür. The collections from Venezuela and other parts of South America were dispersed, but M. Oberthür obtained the greater part, and amongst others the types of *Ancistroma*, the *Pteroplati*, &c. M. Sallé possessed a large number of boxes from Guérin-Ménéville's collection, and in these were numerous types; in addition the quantity of duplicates of his own collecting in Mexico was considerable. The *Coleoptera* realized £500 altogether. The Guérin-Ménéville collection of *Hemiptera*, containing several types, was obtained for the Paris Museum.—EDS.

Reviews.

THE LARVÆ OF THE BRITISH BUTTERFLIES AND MOTHS: by (the late) WILLIAM BUCKLER, edited by GEO. T. PORRITT, F.L.S. Vol. vii (the first portion of the *Geometræ*). 8vo, pp. xv and 176, and 22 chromo-lithographic plates. London: Ray Society, 1897.

At length the series of vols. occupied by "Buckler's Larvæ" seems to be within measurable distance of completion. Another vol. will conclude the *Geometridæ*, and it remains to be seen whether the Ray Society will publish the scattered and disconnected materials in hand for the succeeding divisions. The present vol. extends to *Larentia* on "Manual" arrangement, and on the 22 plates are figured nearly 500 larvæ; sometimes seven or eight varieties of a single species are represented. For the first time in the series chromo-lithography has been employed, and the result seems to us eminently satisfactory. Even in the larger larvæ it was found practically impossible to satisfactorily reproduce Mr. Buckler's exquisite work by hand, and we incline to the belief that for the smaller forms, with infinitely delicate details, a continuation of the former practice would have resulted in disastrous failure. The figures in the vol. before us, if not up to the delicacy of the originals, improve under a hand magnifier, a result practically impossible by hand colouring other than by the master brush of Buckler himself. The number of species of which no figures are given is inconsiderable. But there are many blanks (mostly common forms) in the letter-press. Most of the descriptions appeared in former vols. of this Magazine, either by Mr. Buckler or by his friend the Rev. J. Hellins. Where these failed the editor has republished descriptions by himself and others. We note one omission. No description appears of *Sterrha sacraria*, whereas it was amply attended to by Mr. Hellins in Ent. Mo. Mag., vol. ii (1865). Each vol. of this series is about the cheapest guinea's worth that has ever been offered in the way of standard illustrated works on British entomology, and from the small number of copies printed hardly likely to be found in second-hand catalogues at reduced prices.

ELEVENTH REPORT OF THE INJURIOUS AND OTHER INSECTS OF THE STATE OF NEW YORK, for the year 1895: by J. A. LINTNER, Ph.D., State Entomologist. 8vo, pp. 236, and introduction, with 16 plates. Albany: University of the State of New York. 1896.

In this volume Dr. Lintner has given a more than usually varied Report, extending over several Orders of Insects, with full details. It is impossible to specify these in the space at our disposal. We note, however, that the little House Ant (*Monomorium pharaonis*, L.) has been known to clear a house of bed bugs in a single day, so it is not an unmixed evil. An appendix gives a list of insects affecting the apple tree in America, in which no less than 356 species are mentioned, mostly *Lepidoptera*, *Coleoptera*, and *Hemiptera*.

THE HEMIPTERA-HOMOPTERA OF THE BRITISH ISLANDS: by JAMES EDWARDS, F.E.S. 8vo, pp. 271, and 2 plates; large paper edition, with 28 coloured plates. London: L. Reeve and Co. 1896.

Mr. Edwards has already done good work at this group, and published an exhaustive account of the British genera and species of the *Cicadina* in the Transactions of the Entomological Society of London for 1886 (Part II) and 1888 (Part I). The present volume is in great measure a reproduction of these articles, with the addition of the *Psyllina*; the latter are carefully compiled, and the descriptions are clear and full. Four new species are added, viz., *Liburnia Thoulessi*, *Psylla concinna*, *Psylla brunneipennis*, and *Psylla venata*. There is a useful introduction and two good structural plates. In his preface Mr. Edwards notices the meagreness of the records of localities, and rightly ascribes it to the paucity of collectors of the group; but we think more might have been found, and at all events more advantage might have been taken of Dr. Power's collection, which has apparently been overlooked. The records, however, will probably be largely increased by the publication of the work, which will be of very great service to all who desire to study the British *Homoptera*. The large paper edition contains twenty-eight coloured plates; the great majority of the figures are plain and easy to recognise, and, taken together with the descriptions, they ought to render the identification of the species an easy matter.

THE BUTTERFLIES OF NORTH AMERICA. Third Series, Pt. xvii: by W. H. EDWARDS. 4to. Houghton, Mifflin and Co., Boston and New York. 1897.

We infer that this Part is not only practically the last of the Series, but also of the entire work. If so, it brings to a conclusion a monumental enterprise commenced by the author nearly thirty years ago (1868), and carried on with a singleness of purpose that is most commendable. Most of the Parts have been noticed in this Magazine as they appeared. Of the work as a whole it may be said that it commenced at a time when the number of North American species was very uncertain, and of the transformations, distribution, and habits little was known. Thanks largely to the energy of Mr. Edwards the biology of American species is almost as well known as of those of Europe, and in some respects better known, for there is probably no European work in which the larval details are delineated in the same minute manner. It is an *ouvrage de luxe*, but at the same time probably the most important faunistic work on Butterflies that has ever appeared.

Obituary.

James B. Hodgkinson, F.E.S., was born at Preston on October 27th, 1823, and died at Ashton-on-Ribble, a suburb of the same town, on February 17th, 1897. About 1827 his family removed to Carlisle, and an acquaintance with Mr. T. G.

Heysham, a prominent border naturalist, probably developed in young Hodgkinson the taste for ornithology and entomology that afterwards became so apparent. Subsequently he was apprenticed to an engineer, and worked for many years as such as a journeyman. When about 40 years of age he, with others, set up in business as a cotton spinner. This business was afterwards given up, and he established himself as a yarn agent, from which he retired a few years ago. He probably published no lengthy paper, yet the Natural History and Entomological journals, dating from vol. ii of the "Zoologist" (1844) down almost to the date of his death, gave constant evidence of his untiring activity; but literary work was not his strong point, as numerous editors (who usually had to rewrite his notes) could testify. In this connection it is stated that he kept no notes or accounts of his business transactions, but relied solely on a wonderful memory. It was as a collector that Hodgkinson stood prominently forward. He was emphatically a field naturalist, and his keen eye and an aptitude, bordering on intuition, enabled him to make several notable additions to the British *Lepidoptera*, and especially amongst the Micros, and also to discover the habits of many others previously rare or little known. Combined with this aptitude he had all the secretiveness of the old school. A prominent feature in his character was an abhorrence of having anything in his collection without a name, and this in some instances led to his hastily publishing new names in cases where presumed experts had declined to give any definite opinion. Possessed of a strong constitution, with untiring energy, his outdoor work was continued almost to the last, and he amassed a collection of British *Lepidoptera* scarcely second to any. His death leaves a prominent blank in the ranks of our Lepidopterists, especially in the North of England, where, years ago, he was one of a numerous band of contemporaries, of whom Mr. C. S. Gregson is almost the only survivor. He leaves a widow, two sons and five daughters to mourn his loss.

Societies.

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *February 12th, 1897.*—DR. SHARP, President, in the Chair.

The President showed a remarkable stridulating apparatus in a larva of the Coleopterous genus *Passalus*, recently sent by Mr. C. Hose from Borneo. This larva possesses two pairs of largely developed legs, while each leg of the third pair remains a mere rudiment, but is much altered in form so as to be like a small paw with four or five chitinous digits at the extremity wherewith to play on a striated area on the coxa of the leg before it. He remarked that *Passalid* larvæ are very abundant in logs in the tropics, and that Mr. Champion had informed him that he had heard stridulation proceeding from such logs in Panama. The President also said it was difficult to imagine what use such an elaborate organ could be to larvæ, especially when they led a life of the kind mentioned. He also demonstrated the stridulation of *Coleoptera* by means of a large individual of the Longicorn genus *Batocera*, which produced a rather loud sound when the appropriate movements were made. Mr. Fleet exhibited some *Coleoptera*, including the blister-beetle and *Apion astragali*, taken at Cambridge some years ago by Mr. Rippon.—C. J. WILKINSON, *Hon. Secretary.*

February 26th, 1897.—THE PRESIDENT in the Chair. Professor Newton, Professor of Zoology, was elected an Honorary Member. Mr. Harmer, of King's College, was elected President for the following year. Dr. Sharp exhibited a larva of one of our common *Geotrupes*, and called attention to its stridulating organ, in which one pair of legs work upon the pair in front of them. He said that this beetle in the imago state also possesses a stridulating organ, but it is situated in a different position anatomically, and therefore not corresponding with the larval organ. The latter is lost in the imago, and it is clear that this elaborate structure exists solely for the larval state, but Dr. Sharp acknowledged that he was unable to guess what use such a structure could be to a larva, leading, as this does, an underground life, and having, as far as we know, no relations with the lives of other individuals of its own species that could be influenced by any sound it might make.—L. DONCASTER, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
February 11th, 1897.—R. ADKIN, Esq., F.E.S., President, in the Chair.

Mr. Barrett exhibited specimens of a species new to Britain, *Platyptilia tesseradactyla*, taken by Mr. de V. Kane in the West of Ireland. Mr. Routledge, a fine var. of *Dianthæcia conspersa*, bred from Orkney. It was generally ochreous, the usually white markings being grey. Mr. Tutt, dead larvæ of *Hepialus lupulinus* which had been attacked by a fungus. Living larvæ were also shown which had nibbled the dead ones. On behalf of Mr. Fletcher, of Worthing, he exhibited a series of hybrid *Zygænidæ*, from continental *Z. Ochsenheimeri* and British *Z. filipendulæ*. Also, on behalf of Mr. Prince, of Cheshire, a large box of common species showing the local forms and range of variation. And on behalf of Dr. Chapman, the living larva of *Bryophila perla*, showing its silken gallery to which it retires during the day. It was noted that the species did not hibernate, but fed all the winter. Mr. McArthur, a specimen of *Aplecta occulta*, just bred from a Rannoch larva. Mr. Adkin, a series of the same species, part taken and part bred from larvæ taken at the same locality. They were of good size and very darkly marked. The remainder of the evening was devoted to the exhibition by means of the lantern of some sixty photo-micrographic slides of insect anatomy, by Mr. F. Clark, aided by Mr. Furneaux, F.R.G.S. Some of the prepared objects from which slides had been made were kindly lent by Mr. W. West, of Streatham. Mr. Clark first showed, by means of diagrams, his method of making the slides, and then went on to exhibit various forms of antennæ, the tracheæ, several forms of the tongue, the compound eye, scales of *Lepidoptera*, hairs of common larvæ, and a most interesting series of the parasites of man and animals. The large screen used had been bought by Mr. Edwards and most kindly presented to the Society, which is now admirably equipped with its lantern and all appliances for demonstration purposes.

February 25th, 1897.—The President in the Chair.

Mr. Bishop, of Kingston-on-Thames, was elected a Member.

Mr. Billups exhibited for Mr. Sauzé some seventy species of *Diptera*, *Coleoptera*, *Neuroptera*, &c, which had been taken during the last year. Mr. Tutt, specimens of *Aglais (Vanessa) urticæ*, var. *ichnusa*, from Corsica, and remarked that Mr. Merrifield's experiments had resulted in only an approximation to this var. He

also showed specimens of *Thais Cerisyi*, var. *Deyrolli*, from S. E. Europe. Mr. Adkin, two series of *Pachnobia hyperborea (alpina)*, one from Rannoch and the other from Shetland, and made remarks on its local variation and its unaccountable intermittent appearance. In the discussion which followed Mr. McArthur gave his experience of its appearance in alternate years. Mr. Tutt suggested that the species still retained its boreal habit of remaining two years in a larval condition. Mr. Adkin instanced *Retinia resinella* as having a precisely similar habit. Mr. Mansbridge, a smoky var. of *Spilosoma lubricipeda*, from York. Mr. Tunaley, a large number of species from Aviemore to illustrate his paper, including long and very varied series of *Erebia aethiops*, *Eupithecia sobrinata*, *Larentia didymata*, *Thera simulata*, *T. firmata*, *Cidaria immanata*, *Emmelesia minorata*, *Pædisca ophthalmicana*, *Gelechia populella*, and others, especially selected to show the range of variation occurring in that locality. Mr. Tunaley then read his paper, entitled, "Notes and Observations on a holiday in the Rothiemurchus Forest of Scotland, from July 29th to Sept. 10th, 1896." In a few words he described the geographical surroundings and the geological formation of the district, together with an account of the weather he experienced and some remarks on the necessary equipment for collecting among the Scotch mountains. He then took the more prominent species and described the variations, peculiar habits of life and their protective resemblances. Several of the species were noted as having different times of appearance at different elevations, e. g., *E. aethiops*. He said that *Cloantha solidaginis* at rest on a fir post closely resembled a piece of curled bark, and pointed out the extensive variation in the central band of *T. juniperata*. The paper was interspersed with apt remarks on Scotch characteristics, and terse descriptions of the environment of each species. In the discussion which followed Mr. Tutt compared the habits of *E. aethiops* in the Alps with the species in Scotland, and also contrasted the allied species *E. ligae*, which hid in the fir trees on the disappearance of the sun. Mr. Barrett said that *Epinephele Janira* also roosted at times in the branches of trees at sunset.—
HY. J. TURNER, *Hon. Secretary*

ENTOMOLOGICAL SOCIETY OF LONDON: *February 17th, 1897.*—Mr. R. McLACHLAN, F.R.S., Vice-President and Treasurer, in the Chair.

Messrs. Champion and Jacoby exhibited the collection of *Phytophagous Coleoptera* made by Mr. H. H. Smith in St. Vincent, Grenada, and the Grenadines for the West India Exploration Committee of the Royal Society. Mr. F. C. Adams exhibited rare *Diptera* taken in the New Forest during the preceding year, and including *Callicera ænea* and *Nephrocerus flavicornis*. Mr. M. Burr showed an example of an undetermined species of Locust taken in the Post Office at Bedford Street, Strand, and six new species of *Acrydiidæ* of different genera. The Secretary exhibited a *Cicada* larva from which a fungus, probably *Cordyceps sobolifera*, was growing, which had been sent to the Society from Venezuela, with an inquiry as to its real nature. The Rev. Dr. Walker showed a series of *Coleoptera*, *Hymenoptera*, and *Diptera*, collected in the Orkney Islands during the previous season. Mr. Tutt exhibited bred examples of the extreme radiate variety of *Spilosoma lubricipeda*. This variety occurred naturally in Heligoland, and its existence in Great Britain was probably attributable to accidental importation. Mr. Jacoby and Mr. Champion communicated a "List of *Phytophagous Coleoptera* obtained by Mr. H. H. Smith in St. Vincent, Grenada and the Grenadines, with descriptions of new species."—
W. F. H. BLANDFORD and F. MERRIFIELD, *Hon. Secs.*

ALEOCHARA (BARYODMA) SUCCICOLA, THOMS., A BRITISH INSECT.

BY G. C. CHAMPION, F.Z.S.

Under the name *A. mæsta*, Grav., two species are confused in British collections. One of them is common and widely distributed: this is the *A. succicola*, Thoms., not hitherto recorded from Britain; the other, the true *A. mæsta*, Grav., appears to be very much rarer, and of the thirty specimens representing *A. mæsta* in my collection, two only are referable to it (from the London district, and the Isle of Sheppey respectively), all the others belonging to *A. succicola*. The two insects, which are placed in different subgenera of *Baryodma* by Mulsant and Rey, may be distinguished by the following characters:—

Maxillary palpi with the third joint long, and gradually widening outwards (subg. *Polychara*, Muls. and Rey); head and prothorax coarsely punctate; hind body very sparsely punctate *mæsta*, Grav.

Maxillary palpi with the third joint shorter and subtriangularly dilated (subg. *Homœochara*, Muls. and Rey); head and prothorax finely punctate; hind body still more sparsely punctate, appearing almost impunctate...
succicola, Thoms.

The difference in the form of the maxillary palpi was not noticed by Thomson in his description of *A. succicola* (Skand. Col., ix, p. 216 [1867]). Ganglbauer (Die Käfer von Mitteleuropa, ii, p. 38, 41 [1895]), gives the synonymy of the two species as follows:—

<i>mæsta</i> , Grav.	<i>succicola</i> , Thoms.
<i>sparsa</i> , Heer.	<i>sparsa</i> , Fairm. and Laboulb.
	<i>latipalpis</i> , Muls. and Rey.

But, according to Mulsant and Rey (Aléochaires, p. 135), *A. succicola*, Thoms. (1867) = *A. sparsa*, Heer (1838), and if that is correct Heer's name will have to be used for the insect described by Thomson. *A. cursitor* and *A. rufipes*, Steph. (1832),* are more likely to belong to this species than to *A. mæsta*, under which name they are placed by Ganglbauer. In any case it is quite obvious that the common insect described by Thomson in 1867 must have been previously known, and the name *succicola* can only be provisionally used for it. Dr. Sharp, at my request, has examined his British exponents of *A. mæsta*, and he informs me that with one exception (a specimen from Glasgow) the whole of them belong to *A. succicola*. This latter is extremely variable in size and colour, specimens occurring with reddish elytra or antennæ (these forms sometimes doing duty for *A. brunneipennis*, &c., in collections); the dilated subtriangular third

* The types of these species cannot now be identified with certainty in the Stephensian collection: two specimens are placed under *A. cursitor*, one of which is *A. nitida*, and the other *A. succicola*, and three under *A. rufipes*; these latter being *Microglossa nidicola*!

joint of the maxillary palpi is a conspicuous character in small specimens, in which it is of about the same length as the slender fourth joint.

In one of my two specimens of *A. mæsta* the hind body is as smooth as it is in *A. succicola*, the punctuation varying a little in both species.

A. succicola and *A. mæsta* are both widely distributed on the continent, the latter also occurring in North America; *A. succicola* extends southwards to Gibraltar and Corsica,* and is also found in Madeira; *A. mæsta* is much more local, and there are specimens of it from Savoy, Caunterets, and Lake Baikal, in Dr. Sharp's collection.

Horsell, Woking:

March 29th, 1897.

PLATYSTETHUS ALUTACEUS, THOMS., A BRITISH INSECT.

BY G. C. CHAMPION, F.Z.S.

I possess a male specimen of this insect found by myself many years ago in the London district, probably at Morden, Surrey, in 1869; and Mr. Keys, of Plymouth, has recently sent me two others, females, to name, these latter having been found by him at Slapton Ley, Devon, during the present month. *P. alutaceus* is closely allied to *P. cornutus*, Grav., the two apparently having been regarded as forms of one species by Erichson, Kraatz, and Fairmaire, but they may be separated by the following characters:—

Upper surface shining, very finely alutaceous; the elytra with a more or less distinct testaceous patch on the disc and very distinct scattered punctures...

cornutus, Grav.
scybalarius, Runde.
maxillosus, Peyron.
degener, Rey.

Upper surface dull, more distinctly alutaceous, the elytra especially; the latter black, and with very shallow scattered punctures... *alutaceus*, Thoms.

cornutus, Gyll.
tristis, Rey.

The above mentioned British specimens agree well with others from Corfu, Asia Minor, and Morocco (*Walker*) in my collection. In all these examples the elytra are duller and more distinctly alutaceous than in any of the numerous British and European examples of *P. cornutus* that I have examined. The colour of the elytra is perhaps

* The *A. mæsta* of my Corsican list (Trans. Ent. Soc. Lond., 1894, p. 233) belongs to *A. succicola*.

variable in both insects, and not to be relied upon as a specific character. In both *P. cornutus* and *P. alutaceus* the elytra are margined at the apex, as well as along the suture. *P. alutaceus* is widely distributed on the continent.

Horsell, Woking :
April 17th, 1897.

ON THE HABITS OF *CIDARIA RETICULATA*.*

BY THE REV. ARTHUR MILES MOSS.

Having been made acquainted by a friend with the food-plant, the wild balsam (*Impatiens noli-me-tangere*), and seeing from Newman that July was the month for the moth, I determined to go and search. It was July 4th, 1892, and, as though by inspiration, I went straight to a spot in Westmoreland where I had an idea that I had seen the plant, I found it at once, and within five minutes was rewarded—to my intense joy and more intense astonishment—for a beautiful fresh specimen of *C. reticulata* flew up out of the balsam and settled on a nettle leaf before my eyes.

I went hot and cold in turns lest I should miss it, but was soon able to breathe freely when I saw it safely in the net. I could hardly believe my eyes, for my hunts are by no means always successful, and on this occasion I had not *dared* to anticipate success. I succeeded in catching two more that afternoon, missing another; they were not such good specimens as the first, and as the season had been very hot, I do not doubt that they were out before the end of June.

I paid several more visits and caught ten or a dozen altogether, but never saw many at one time, and generally succeeded in missing as many as I caught. The balsam grows in patches over an area of (roughly) 400 yards in length and 100 in breadth, on a very steep side of a hill, among loose slatey stones and moss-covered rock, and generally under the shade of trees and saplings. These circumstances combined will perhaps furnish an excuse for my being so clumsy as generally to miss one-half of what I saw, and several times I nearly sprained my ankle.

I generally found the moth sitting on a tree trunk, though occasionally it started out of the food-plant when the latter was plentiful; but I never found it sitting on a rock or stone. Sometimes when it was difficult to net I succeeded in bottling it straight off, but often lost the specimen in the attempt, as it flies very sharply, generally over the top of branches ten or a dozen feet from the ground, and settles

* Read at the Meeting of the Lancashire and Cheshire Entomological Society on March 8th, 1897.

in one of the leaves, so that it is very difficult to follow, and in such a case I generally lost it. In one instance I missed one among bracken, gravel and rubbish *under the net*, and believe that it feigned death.

Other places where the plant grows even more luxuriously have yielded me nothing. I know of half a dozen such, and have searched them carefully for both imago and larva. There seems to be nothing to account for its absence. I visited the original spot in September, and found larvæ commonly, almost one on every plant, but was not successful with them.

In 1893, a colder and consequently later season than 1892, I found no moths before July 20th and larvæ not till October, and then not so plentifully. I obtained about thirty, and sleeved them out on a pot of growing balsam in the garden for the winter. Probably as many as 75 per cent. were ichneumonised, the parasite being a large fly for so small a moth; its cocoon is grey, with two parallel dark rings round it.

I had no opportunity of getting either imago or larva in 1894, but bred three imagines from the previous year's larvæ about July 20th. In October I found most of the balsam plants torn up by the roots. Conferred with Mr. J. B. Hodgkinson, of Preston, on the subject, and he and I wrote letters to Magazines on this apparent act of vandalism. Mr. Gregson has since suggested, and with great probability, that the balsam had not been torn up to exterminate *reticulata*, but in order to find the larvæ of the Tortrix, *Penthina postremana*! July, 1895, showed that my fears about its extinction were unfounded, but there were certainly very few imagines of *reticulata*, and I did not find a single larva in October, which may have been too late. In 1896 I caught three of the moths and missed as many more.

The larva shows a decided preference for the green seeds in the pods over the leaves, though it will eat these also. It is very similar in appearance to a long narrow seed-pod, and generally rests in the same position under a leaf, holding on to the midrib, and the head hanging down, though sometimes it is on a stalk. The seed-pods bend when eaten into, instead of bursting as usual. The larva is of a delicate green with a very faint red dorsal stripe, more noticeable at the extremities than in the middle. It spins a rather tough cocoon in the soil, and changes to a very small dumpy pupa. In this state I have heard of its being found by collecting the loose soil and rubbish round each plant, the larva not wandering far away, but I have never myself taken it in this way, probably many would be destroyed in the process.

The late Mr. Hodgkinson knew of this spot, and of two others which have unfortunately been destroyed since. I am confident that the insect does not occur in the other half dozen places where I have carefully searched. No doubt it has other localities if energetically pursued, for which I have neither time nor opportunity.

26, Hamilton Square, Birkenhead :

March, 1897.

ON THE DISTRIBUTION OF *GELECHIA SUPPELIELLA*, WISM.,
AND *PELIELLA*, Tr.

BY EUSTACE R. BANKES, M.A., F.E.S.

Lord Walsingham, when writing his very interesting paper (Ent. Mo. Mag., Ser. 2, vii, pp. 250-1) on *Gelechia suppeliiella*, was evidently not aware that this species had occurred out of England; it may therefore be useful to record some further facts as to the distribution of it and its close ally. In the Stainton continental collection the series standing as "*peliiella*" consists of ten specimens, of which three, labelled respectively "Zeller, 11/50," "South Germany, Staudinger, 1/76," and "Germany, Staudinger, 12/77," are *suppeliiella*, while the remaining seven are *peliiella* and are labelled as follows, one "*e. l.* 3/7/59, *R. acetosella*, Soden, Schmid," two "Heyne, 3/73," one "South Germany, Staudinger, 1/76," one "Germany, Staudinger, 12/77," two "Silesia, Staudinger, 7/1/90." The note-books contain no further details of any consequence about them. In the Frey collection the series labelled "*G. peliiella*, Tr." is composed of three specimens only, of which the first and second are from "Breslau," while the third is from "Frankfurt": all three are fine *suppeliiella*. Next below follows a set of four specimens of which the first alone bears a label, which reads "*G. alacella*, Dup., Z., H.-S., Frankfurt:" this means that Frey identified them all as *alacella* and that they all came from Frankfurt, but, as a matter of fact, the two first only are *alacella* while the last two are very fine *peliiella*, Tr.! Frey recognised the distinctions between the latter species and *suppeliiella*, but was deceived as to their real identity. Since Zeller sent Stainton *suppeliiella* in 1850, his own collection will most likely reveal other spots for it, and doubtless some of the many continental localities recorded by Stainton, Sorhagen, and others, for *peliiella* really refer to its ally: in any case the above facts serve to show that both insects are widely distributed in Germany. In his note in Ent. Mo. Mag., XXV, 161, Mr. Warren does not mention the locality where he collected the larvæ which now prove to have been *suppeliiella*, so it may prevent future uncertainty to state that it was near West Wickham, where Messrs. Douglas and Stainton had already taken the imago many years before. The species also occurs at Sandy, in Bedfordshire, where two examples in my collection were taken by the Rev. G. H. Raynor on June 29th, 1883.

I regret to say that my efforts to find British examples of *peliiella* have so far been in vain, nor do I know any reason for supposing that it occurs in this country. The

first important English notice of reputed "*peliiella*," just previously included but without comment in Stainton's Syst. Cat. (1849), was published in Trans. Ent. Soc. Lond. V, 200 (1849), where Mr. J. W. Douglas gives a description, and adds that he only knows one British specimen which was taken by Mr. Stainton at Wickham. His description leaves it uncertain whether he had *peliiella* or *suppeliella* before him, but he now says that it was taken from Stainton's Wickham example. The Stainton British series of so-called "*peliiella*" consists of 16 specimens arranged in two parallel columns, and the individual described by Douglas must be one of the two top specimens, for no others were taken before 1852. Of these two, both mounted in the same early style, the left is unlabelled, while the right is labelled "1489," but since the number is unprecedented by Stainton's special "S," his note-books contain no explanation of it. The latter moth, which is *suppeliella*, is rather worn, and from this fact, and from its colour, which is not "black-brown," it is clear that the former is the one described by Douglas and taken by Stainton at West Wickham in or before 1848. It is in fine condition, and the position of the first discal, which lies *exactly* above the second plical, blackish spot proves that it is *suppeliella*, though its ground-colour is browner, more uniform, and less white-sprinkled than usual. The remaining fourteen are likewise all *suppeliella*, the note-books showing that the second, third, and fourth specimens in each column were captured at West Wickham on July 15th, 1852, while the other eight are labelled "*e. l. W. Wickham, G. H. [rectius, "G. W."—E. R. B.] Bird, 4 . 4 . 89.*"

Lord Walsingham says (*l.c.*) that Stainton's descriptions in I. B. Lep. Tin., p. 111 (1854), and Nat. Hist. Tin., IX, 106-15 (1865), were undoubtedly taken from the true *peliiella*, because of the position assigned to the two important spots: with all due deference to him, however, I believe that the former must have been made from *suppeliella*, for when it was written Stainton had no true *peliiella*, but eight British and one continental *suppeliella*, and his remark that the upper is "hardly posterior" to the lower spot, while implying that in *Gelechia* as a rule it is decidedly posterior, is strictly applicable to these, for in one British specimen the upper spots are clearly a little posterior to the lower, and on the right wing of another the upper projects distinctly beyond the lower and smaller spot. Seeing that Stainton (I. B. Lep. Tin., p. 111) uses the term "rather posterior" when describing *alacella*, his words "hardly posterior" would be quite inappropriate if referring to true *peliiella*, in which the spots stand much more obliquely. The description in Nat. Hist. Tin. was doubtless based chiefly on the single German *peliiella* bred in 1859, which was the only example Stainton then possessed, but it was clearly modified so as to include the *suppeliella*, for he speaks of the upper spot as "very little posterior" to the lower, although in the figure (presumably made from the same individual) it is *decidedly* posterior, and he obviously alludes to *suppeliella* in the remark "caught specimens are paler and of a greyish tinge." The description in the "Manual" (1859) was evidently taken from *suppeliella* as was also the figure in Morris' "British Moths" (1870). Thanks to Mr. P. B. Mason's kindness I have examined his own and Mr. J. W. Douglas' series of supposed *peliiella*; the former consists of 11, the latter of 6 specimens, and all are *suppeliella*. Four of Mr. Mason's examples were bred from W. Wickham, but the history of the others is uncertain: of Mr. Douglas', one was taken at Dulwich Wood, June 3rd, 1848, four at W. Wickham on June 5th, 1848, and one on July 22nd, 1853.

After critically examining nearly 100 *suppeliella*, mostly bred, I find that the position of the first discal spot, which is usually exactly above the second plical spot, distinctly varies from a little *anterior* to a little *posterior* to it, while in *peliiella* it varies from only a little to considerably posterior to it: thus the range of position is from the same point though in opposite directions in the two species. The black spots, though somewhat inconstant in size, are, as a rule, larger, more blot-like, in *suppeliella*, and its colour is less uniformly dark, owing to the presence of many more whitish scales. Lord Walsingham's remark on Duponchel's *original* figure of *peliiella* is especially interesting, because in the published figure the upper of the two most important spots is omitted, although in the description mention is only made of three black spots, of which one is "near the base" and two "in the middle."

The Rectory, Corfe Castle:

January 4th, 1897.

[When describing *Gelechia suppeliella* [Ent. Mo. Mag. XXXII, 250-1 (1896)] I was unable to examine the series of *peliiella* in the Zeller Collection, and could not therefore, attempt to deal with the distribution of these two closely allied species. Zeller's series of *peliiella* consisted of 27 specimens, of which 8 are *peliiella* and 19 are *suppeliella*, and his specially labelled exponent of "*Gelechia peliiella*, Tr., Dup. 297, 11., H-S., 484" is not that species but *suppeliella*. The majority of the specimens are simply dated, no locality being indicated, while several have no labels whatever. I am greatly obliged to Mr. McLachlan for having informed me that the specimens with dates but without localities would, in the majority of cases, prove to have been collected either at Glogau or at Meseritz, and that the obituary notice of Zeller, Ent. Mo. Mag., XX, 1-8 (1883) would furnish the actual dates at which he had collected in various localities. With this clue little difficulty has been experienced in assigning the proper locality to these merely dated specimens, and the localities thus obtained for the two species from this collection are as follows —

Gelechia peliiella, Tr. (8 specimens). 1 "N. Langenau, Sdw., 12, 49;" 1 Meseritz (= "13/6/68"); 1 Gross Glogau (= "24/6/55"); the remaining 5 specimens have no labels.

Gelechia suppeliella, Wlsm. (19 specimens). 3 Frankfort-on-the-Oder, or Gross Glogau (= "6/6/34;" "11/6/34"); 2 Gross Glogau (= "20/7/42," "6/7/56"); 5 Meseritz (= "28/6/62," "19/6/64," "19/7/66"); 1 Grünhof, bei Stettin (= "22/7/70"). Of the remaining specimens, one on a short white metal pin is undoubtedly of English origin, and was probably received from either Douglas or Stainton, it is labelled "112" and "1521" (the "15" being prefixed in red pencil); a second "Posen, Gnadenf., 1857;" a third "*Heroldella*, Zttst., Oct., 47, 56;" a fourth "Fr., 20/6 Müll." (?= Frankfort); another specimen has an undecipherable label, while the remaining three have no labels.

In the *Isis*, 1839, 199, Zeller wrote, "Viele Exemplare, Glogau, Frankfurt." Three specimens only can be identified as having been in Zeller's possession at that time, and of these two are dated "6/6/34" and the third "11/6/34;" an unset specimen labelled "Fr., 20/6 Müll." (the year being omitted) may have been the authority for the record "Frankfurt," supposing that the other specimens captured in 1834 were taken at Glogau—but this is uncertain.

Heinemann's description, Schm. Deutsch. Tin., 211 (1870) appears to have been taken from the true *peliiella*, for he writes of the critical spots, "die zwei vordern schräg gestellt," and again "die beiden vordern schräg über einander," but we cannot deal with his localities, for it is possible that his series may have contained both species.

Although it was obvious that Snellen's description, Vlind. Ned. Micr., 639 (1882) also referred to *peliiella*, for he writes of the same spots, "de onderste der beide eerste staat iets meer wortelwerts dan bovenste," yet I am glad to be able to confirm my opinion by a quotation from a letter from Mr. Snellen, dated 21st Nov., 1896:—"What I have as *peliiella* from Oesel and Livonia (v. Nolcken) and this country" (i. e. Holland) "are all rightly *peliiella*, Tr., Wals., and my description" (in de Vlinders van Nederland) "also undoubtedly applies to that species, but besides these I have one specimen more, received from Mr. de Graaf, and formerly seen by the late Mr. Stainton, who declared it to be also *peliiella*. Mr. de Graaf, however, could never agree with Mr. Stainton's identification, on account of the paler and less uniform colour of the fore-wings and the different position of the two first dark spots (being * instead of *). This specimen answers very well to Lord Walsingham's description of *suppeliella*. Afterwards I captured a second, and so I think I may admit that the species also exists on the continent." Mr. Snellen asks further whether *suppeliella* can be identical with *ignorantella*, H.-S., 510. Herrich-Schäffer's figure would be comparable to *peliiella* rather than to *suppeliella* so far as the critical spots are concerned, but it differs from both in having the outer spot in line with the upper critical spot (not with the basal spot) and in having an oblique yellowish streak from the costa to the lower critical spot. Mr. Snellen also refers to a paper by Major Hering, Stett. Ent. Ztg., LIV, 96-8 (1893) wherein it is suggested that *ignorantella*, H.-S. = *ochrisignella*, Nlk. The type of *ochrisignella*, Nlk., is in the Zeller Collection, and while closely allied to *peliiella*, seems to me to be nearer to Herrich-Schäffer's figure of *perpetuella* (511), while *perpetuella*, Zell. Coll., is more like *ignorantella* (H.-S., 510) but at present I am not disposed to dispute Major Hering's conclusions.

Mr. J. W. Douglas (*in litt.* 17, XI, 1896) writes, "I cannot suppose that Stainton described his *peliiella* from a foreign specimen—all his habits are against such a notion." Mr. Durrant has examined Stainton's British series of *peliiella* and confirms Mr. Banks' opinion that they are all *suppeliella*. In suggesting that in the *Insecta Britannica* Stainton's description was taken from *peliiella* and not from *suppeliella*, I simply relied upon the description, which could only be properly applied to *peliiella*, but as Mr. Banks has proved that at the time this description was made Stainton did not possess *peliiella*, there can be little doubt that it was drawn up somewhat loosely from a British specimen, but I was only able to judge from the description itself and not from the specimens described.

The distribution of these two species appears to be as follows:—*peliiella*, Lapland? (Zetterst.); Livonia; Oesel; Germany; Holland; Corsica: *suppeliella*, Germany, Holland, England.—WALSINGHAM, Merton Hall, February 6th, 1897].

Captures of Coleoptera during the past twelve months.—It may interest some of the London Coleopterists to hear of the following captures of *Coleoptera* during the past twelve months. At Oxshott, in the early spring, in and about the nests of *Formica fuliginosa*, the usual run of *Myrmedonia humeralis*, *laticollis*, &c., with an occasional *Microglossa gentilis*; and, in the sandpits, *Cardiophorus asellus* and *Atemeles emarginatus*. At Portland, in April, *Trichonyx Märkeli*, one specimen, in company with *Claviger foveolatus*. At Epping Forest, in April and May, *Mycetophagus atomarius*, *Litargus bifasciatus*, *Triplax russica*, and *Xyleborus saxeseni*, in fair numbers, in old beech logs, with an occasional *Ditoma crenata* and *Silvanus unidentatus*. At the New Forest the best thing obtained in the early part of the year was *Pediacus dermestoides*, two specimens of which were captured on April 30th, under bark. At Bookham, May 17th and 24th, by beating hawthorn, *Orsodacna humeralis* (1), *Clytus mysticus*, *Ischnomera cærulea*, and *Hedobia imperialis*; also *Callidium violaceum*, in some numbers in old pine posts near the station; *Asemum striatum*,* two specimens, from old pine stumps not far from the village, and *Crepidodera helxines*, var. *cyanea*, Marsh., on aspen bushes. At Richmond Park, on May 23rd, I had the pleasure of taking my first specimen of *Ischnodes sanguinicollis*, flying in the early morning, near the old locality; *Sceraptia fuscula* (1) and *Xylophilus pygmaeus* also occurred in the same place. At Mickleham, July 18th—September 20th, the following were the most noteworthy captures:—*Licinus depressus* (3), *Chrysomela göttingensis*, *Choragus Sheppardi* (2), *Ceuthorrhynchus echii*, *trimaculatus*, and *asperifoliarum*, *Ceuthorrhynchidius horridus*, and *Pogonochærus dentatus*. At Brent Knoll, Somerset, October 23rd—25th, *Anisotoma furva*, one, flying in the hot sunshine, and abundance of *Cicindela maritima*, amongst other commoner species. At Box Hill, December 25th, *Lebia chlorocephala*; this finishing my list of captures for 1896.

So far, this year, although the season has hardly commenced, seems to be decidedly in advance of that of 1896. The following local species have already been observed:—At Brent Knoll, Somerset, January 5th, *Brachytarsus varius*, two specimens, from moss and lichen siftings off old apple trees. At Richmond Park, February 14th, *Opilo mollis*, one specimen, under bark of a plane tree. At Dormans, Sussex, February 20th, *Endomychus coccineus*, sixteen examples, under the bark of an old willow. At Dorking, March 9th, *Leptinus testaceus* (6), from a rodent's nest under an old barn; and *Orthochates setiger* and *Hyperaspis reppensis*, in moss. At Richmond Park, March 14th, *Prognatha quadricornis*, in profusion, under beech bark. At the New Forest, March 21st, *Anobium denticolle*. With regard to this interesting capture, the following observations as to its life-history may be worth mentioning:—The tree attacked was an old oak, and contained three distinct colonies, two of which were in the larval stage, and for obvious reasons left alone. The perfect insect pupates in a small cell about half an inch from the surface in the rottenest wood. The male, on emerging, bores through to the cell of the female, where copulation takes place, in which condition I had the pleasure of taking six specimens. The female then proceeds to bore into the more solid wood, depositing the eggs in the boring, somewhat after the manner of various *Scolytidæ*. The males do not appear to live long after copulation, as I saw several quite dead, but perfect, in the

* An interesting record, showing that this boreal insect is gradually establishing itself in the south of England, it having been recently found in the New Forest also.—G. C. C.

old cells of the female. This may in some way account for the rarity of the species, and I should say from the appearance of the distinct colonies that the insects very seldom leave the tree until forced to do so, as there was no trace whatever of an external boring on the old oak in question. I have to thank a friendly *Thymalus limbatus* for this discovery, as I should never have thought of searching where there was no external working visible. At Wimbledon Common, March 25th, *Stylops melittæ*, four males and six females; these were taken by catching specimens of *Andrena rosæ*, race *Trimmerana*, hovering round the willow bloom. They are not at all difficult to detect, the females only of the *Andrena* apparently being attacked, and the presence of the *Stylops* is made manifest by the somewhat moribund appearance of the bees, and by their apparent inability to collect pollen, the healthy females having their legs covered with pollen.—BETRAM GEO. RYE, 212, Upper Richmond Road, Putney, S.W.: March 25th, 1897.

Coleoptera in Jersey.—In June last I had a brief stay of three days in Jersey. Only a portion of that time was available for collecting; but perhaps a list of the species met with may not be without interest. *Coleoptera* were distinctly less abundant than on the coast here, both beating and sweeping producing very few species, while *Geodephaga* were very sparingly obtained under stones. I had only been in the Island a few hours, however, before I found in the rocky pools on the coast, close to St. Helier's, *Ochthebius Lejoli* in plenty; it occurred under exactly similar conditions to those which prevailed at Ilfracombe, where I first met with it in the previous June. With it were a few specimens of *Helophorus*, which proved to be nothing better than *æneipennis*. I found afterwards that the *Ochthebius* occurred all round the coast, at every place where I was able to try for it. Other species found on the shore included *Cilleus lateralis*, *Diglossa mersa*, *Aleochara obscura*, *Caesus xantholoma*, and *Homalium riparium*. Some sandy flats yielded *Onthophagus taurus* in plenty, accompanied by *O. vacca* and *O. nuchicornis*, *Copris lunaris*, *Aphodius fossor*, *A. fimetarius*, *A. ater*, and *A. merdarius*, *Saprinus æneus* and *Hister unicolor* being less common at the same spot. From the dodder a single specimen of *Smicronyx cicur* was obtained by beating, and in a little hollow I found *Cryptocephalus vittatus*, *Dolichosoma nobile*, *Malachius viridis*, and some numbers of a minute *Mordellistena* which is at present undetermined. Other species met with include *Harpalus latus*, *H. anxius*, and *H. serripes*, *Hydroporus lepidus*, *Anaspis thoracica* and *A. fasciata*, *Silpha obscura*, *Phalacrus corruscus*, *Callidium variabile*, *Luperus nigrofasciatus*, *Otiorrhynchus rugifrons*, *Apion fuscirostre*, *A. malva*, and *A. hamatodes*, *Trachypylæus aristatus* and *T. scaber*, *Cænopsis Waltoni*, *Strophosomus retusus*, *Sitones hispidulus* and *S. cambricus*, *Polydrusus conflens*, *Bruchus ater*, and *Caulotrypis æneopiceus*, the last mentioned abundant in oak and tamarisk.—W. H. BENNETT, 15, Wellington Place, Hastings: March 9th, 1897.

Libellula fulva, Müll., and *Æschna mixta*, Latr., in Suffolk.—Picking up things at random at Beccles in 1892, I took single specimens of these two uncommon and local species. The former was secured in its native marshes, which, along the whole of the north border of Suffolk, represent the ancient coast line of the German Ocean, and the latter in a window of a house not far from the original site of the Saxon lighthouse, now occupied by the Church. I did not know the species at the

time or I should probably have turned up more of each, since these marshes are undoubtedly a fine habitat of *Neuroptera* generally. Beccles is now ten miles inland.—CLAUDE MORLEY, Everton House, Ipswich: *March 27th, 1897.*

Astata stigma, Panz., &c., near Ryde.—I was able to give but very little time to entomology last summer, and what few days I could spare were mostly rainy. Towards the end of June, however, I got a few Aculeates, the best being a ♀ *Astata stigma* on the sandhills at St. Helen's. *Pompilus rufipes* was plentiful at the same place. Both sexes of *Colletes picistigma* occurred at Spring Vale on *Achillea*. At St. Helen's I got *C. fodiens* and *C. marginata*; of the latter only two males. *Andrena pilipes* and *Calioxys vectis* on *Rubus* at Sandown.—G. E. FRISBY, Leonie Villas, Park Road, Ryde, Isle of Wight: *March 18th, 1897.*

Tephrosia bistortata (*crepuscularia*), and *T. crepuscularia* (*biundularia*).—It will be remembered that last year Mr. Barrett, in writing of specimens of a second brood of one of the *Tephrosiæ* captured in a wood near Reading in July, referred them to *T. crepuscularia* (*biundularia*) because *T. bistortata* did not occur in this particular wood. The specimens to which I refer were exhibited on September 10th last at a Meeting of the South London Entomological Society. Being doubtful as to the absence of *T. bistortata* (*crepuscularia*) from this wood, I went on the 22nd inst. to look for it, and took two, one in a larch plantation, the other from a beech trunk near the same plantation. I again visited the wood on the 24th inst. and captured two more; this time both specimens were taken from larch trunks. The assumption that *T. bistortata* was absent from this wood is, therefore, erroneous, and the insects taken last July should in all probability be referred, not to a second generation of *T. crepuscularia* (*biundularia*), but to a second generation of *T. bistortata* (*crepuscularia*).—J. CLARKE, Reading: *March 27th, 1897.*

[Received before the publication of the editorial note on p. 79 *ante*.—EDS.]

Review.

MONOGRAPH OF THE BOMBYCINE MOTHS OF AMERICA NORTH OF MEXICO. Part I, Family I, *Notodontidæ*: by ALPHEUS S. PACKARD. 4to, pp. 287, with 49 plates and 10 maps. Washington: National Academy of Sciences. 1895.

There is every reason to believe that this important memoir, although dated 1895, was not distributed until 1896 was well advanced. This is unfortunate, because it did not enable writers of papers dealing with similar subjects to embody the author's views, but some of the conclusions were foreshadowed in separate papers. It is necessary to deal with the work from two standpoints. Firstly, Dr. Packard tells us that for some years he has been collecting materials for a general work on N. A. Bombycine Moths, of which this is the first instalment. It is exhaustive in the highest degree, the descriptions are minute, the local information of the fullest (so far as obtainable), and the plates are mostly excellent. The figures of the perfect insects are executed from photographs (a plan we think not entirely free from objection); those of the transformations are coloured; the anatomical details are very full; and as a somewhat novel feature the distribution of the species of the larger genera is indicated on maps. But the systematic portion is preceded by a

series of chapters on *Lepidoptera* as a whole, in which the subject is treated from the most modern ideas, including Dr. Chapman's suggested classification from the pupal characters. The author is not a Natural Selectionist *pur et simple*. As to phylogeny, the author suggests that the *Lepidoptera*, *Trichoptera*, and *Diptera* may have had a common ancestry, the *Lepidoptera* being first differentiated, and the *Diptera* last. Prof. Comstock's division into *Jugatae* and *Frenatae* is not accepted, and probably with reason. The Order is divided into two sub-orders, (1) *Laciniata* (= *Eriocephalidae*) and (2) *Haustellata*, including all the rest (with *Micropteryx*). The chapter on a rational system of nomenclature in neuration of *Lepidoptera* (as opposed to the empirical practice of using numbers only) is suggestive and useful. But we are still much in the dark as to the terms "costa," "subcosta," and "radius," as used in other Orders, the inference being that the anterior edge of the wing in *Lepidoptera* is usually not regarded as a "nervure" in an anatomical sense, and is, therefore, not equivalent to the "costa" in most other insects. Here we must stop; we have before us a masterly work.—R. McL.

Obituary.

Alois Friedrich Rogenhofer.—The death is announced of this well-known Lepidopterist at Vienna, on January 15th last, aged 65. For many years he was attached to the Entomological Department of the Vienna Natural History Museum. His name will always be prominent in connection with the Lepidopterous portion of the results of the voyage of the "Novara," but he also published many papers, chiefly in the "Verhandlungen" of the Zoological-Botanical Society of Vienna. He was noted for his courtesy, to which some of our own countrymen who from time to time visited the Austrian capital can testify, and was instrumental in establishing an Entomological Society in that city, but we know not if it is still in existence.

Dr. John Hamilton, of Allegheny, Pa., U.S.A., died in Florida, whither he had gone to recruit his health, on February 12th last, within a few days of completing his 70th year, he having been born in Ohio on February 17th, 1827. He practised as a physician in Allegheny for many years, and did not publish anything on entomology until about 1882, since when his contributions, especially concerning *Coleoptera*, have been numerous. Possibly one of the most important is his "Catalogue of *Coleoptera* common to North America, North Asia and Europe" (Trans. Am. Ent. Soc., 1894), an abstract of which (so far as regards British species) was given by Mr. Champion in the Nos. of this Magazine for June and July, 1895.

The late Mr. Alexander Napier.—The printer of this Magazine, from its commencement in June, 1864, passed away on April 8th, aged 71. He began as a compositor on a daily newspaper, and in 1850 set up for himself at 52, Seymour Street, Euston Square, subsequently enlarging his office by the addition of the adjoining premises, and gradually establishing a considerable business, in which he was a working hand until quite recently, assisted by members of his family, and by the foreman (Mr. Bradbury), whose services date from 1857. The Editors pay a tribute of respect to the memory of an upright, worthy man.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *February 15th, 1897.*—Mr. R. C. BRADLEY in the Chair.

Mr. Bradley showed an unusually large specimen of *Cimex sylvarum*, from Sutton. Mr. A. H. Martineau, bramble stems containing pupæ of Aculeate *Hymenoptera*, and explained how to collect them in this manner; also Cocci of cochineal, as imported; also *Vespæ* to show their position during hibernation; they hang on by their mandibles with their legs all drawn up and their wings under the body, the wings to some extent supporting the body. Mr. G. W. Wynn, varieties of *Cerastis vaccinii* and *spadicea* taken at sugar at Hanbury Park; one of *vaccinii* had a pretty chestnut thorax with chestnut marginal bar and fringes and some at the base of the fore-wings, the rest of the fore-wings being greyish, giving the appearance of a chestnut insect with greyish bars. Mr. Fountain, local bred *Nyssia hispidaria*. Mr. C. J. Wainwright, rare *Diptera*, including *Orthoneura brevicornis*, a pair from Sutton; *Chrysogaster virescens*, females, from Sutton; and *Cheilosia Bergenshammi*.

March 15th, 1897.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. R. C. Bradley showed various *Lepidoptera*. Mr. A. H. Martineau, *Odynerus levipes*, from Wyre Forest, a rare insect which he said seemed to be well established at Wyre, as Mr. Bradley had also taken specimens there on another occasion. Also he showed *Sphecodes niger* ♂. Mr. Bethune-Baker showed two drawers containing a portion of the *Papilionidæ*, with the genus *Parnassius* and allied genera. They included *Luehdorfla Puziloi*, from Vladivostock, *Sericinus Telamon* from Eastern Asia, *Ismene Helios* from Samarkand, etc., and a fine variety of *Doritis apollinus* from Asia Minor.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *March 12th, 1897.*—DR. SHARP, President, in the Chair.

Dr. Sharp exhibited, on behalf of Dr. Haviland, part of his magnificent collection of Termites. His method of preparation consists in placing the various forms of a species found in one nest, in glass tubes divided into compartments by cotton wool, and filled with spirit. A photograph of a Termitarium of *Termes malayanus*, taken *in situ* after it had been sectioned, showed the royal cell in the middle of the structure, and the chambers for growing fungi—this species being a fungus grower—about the periphery. Portions of this nest and individuals taken from it were exhibited. The nest is composed of thin, fragile laminæ, of a pottery like structure, but the royal cell, composed of this substance, is very thick and solid. The fungus-chambers are not constructed of clay, but of comminuted vegetable matter, subsequently cemented together. The specimens taken from this nest included two queens and one king from the royal cell, large and small soldiers, and large-headed and small-headed workers.—L. DONCASTER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *March 8th, 1897,*—S. J. CAPPER, Esq., F.L.S., F.E.S., President, in the Chair.

Mr. F. Birch read a paper, entitled, "An Excursion to Cassiopeland, with a

sample of its Entomological Fauna," in which he graphically described a visit to the grand Langdale Pikes in Westmoreland in search of this, the only Alpine species of butterfly occurring in England, which he was successful in capturing along with *Crambus furcatellus*, and other rare mountain species. The Rev. A. M. Moss read a paper, entitled, "Notes on *Cidaria reticulata* from Windermere," in which he recounted his experience in taking this rare and beautiful moth from its curious food-plant, *Impatiens noli-me-tangere*, both in the larval and imago stages. Both papers were well illustrated by numerous specimens. Mr. Moss also exhibited a drawer of Bombyces with life-histories. Mr. T. G. Mason, a long series of *Tenio-campa opima*, bred a week previously. Mr. John Watson, *Colias Hyale*, and varieties *poliographus* and *Simoda*, and *C. Erate*, variety *sareptensis* and *ab. erioptera*, and *C. Romanovi*.—F. N. PIERCE, Hon. Sec., 1, The Elms, Dingle, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
 March 11th, 1897.—R. ADKIN, Esq., F.E.S., President, in the Chair.

Mr. Lucas exhibited living nymphs of the Dragon-fly, *Pyrhosoma minium*, from Oxshott. Mr. Tutt, a pine branch with a nest of a gregarious Europterid moth sent from Cannes by Dr. Chapman. It was presumedly that of *Cnethocampa pityocampa*. He then gave the results of a recent examination of the ova of *Tephrosia crepuscularia* (*bistortata*) and *T. biundularia*, illustrating his remarks with blackboard diagrams from drawings made under the microscope that day. There were three distinct batches of ova; 1, of *T. crepuscularia*, 2, of *T. biundularia*, and 3, of the result of a cross between the two species, a female of the former and a male of the latter. The shape and texture of the three batches were all differentiated. Those of *T. biundularia* were smaller, somewhat oval in shape, of a yellow colour and more opaque, whilst those of *T. crepuscularia* were cylindrical with rounded ends, of a pearly-green, slightly transparent and iridescent. The ova which were the result of the cross were intermediate in size, slightly more rounded at one end than the other, and more variable *inter se* than either of the other batches, which were remarkably constant in their characters. He was indebted to Mr. Bacot for the opportunity of examining these batches side by side under the microscope. That gentleman had succeeded in breeding the species at the same time, and had forwarded him the ova on the same day as they were laid. He did not know whether each batch was the product of a single female or not. Mr. Tutt then referred to the alleged occurrence of *T. biundularia* in Morayshire, and said that the opinion of several Members was that Mr. Adkin's specimen was only *T. crepuscularia*. Mr. Home's specimen from the same district was now exhibited, and he (Mr. Tutt) said that it was identical with the Perthshire specimen and of the same type as the Central European forms of *T. crepuscularia*. Mr. Montgomery, larvæ of *Manis manna*, which he had obtained from Mr. Young, of Rotherham. Mr. Adkin, specimens of *Arctias grossulariata*, in one of which the yellow band extended two-thirds of the hind-wing, and in the other the yellow colour was reduced to a very pale buff. He also showed an *Arctia Caja*, with fore-wings with brown and with the blue-black blotches of the hind-wings much as discussed then took place on the protection of insects in 4 finally the following resolution was adopted:—"That

the thanks of the South London Entomological and Natural History Society be given to the Committee of the Entomological Society of London for the Protection of Species of Insects in danger of extermination; that the Society strongly approves of the work, and that the Members present pledge themselves to use their personal efforts to further the objects of the Committee.

March 25th, 1897.—The President in the Chair.

B. H. Waters, Esq., of 48, Finsbury Pavement, E.C., was elected a Member.

Mr. McArthur exhibited specimens of *Melanippe hastata* from various localities, and said that he had never taken the species in Shetland nor had he seen the food-plant there. Rev. E. Tarbat, a gynandromorphous specimen of *Melanargia Galatea*, taken at Swanage. The markings of the under-side followed those of the upper, Mr. Mansbridge exhibited a bred series of *Anchocelis rufina*, from Huddersfield, which were less uniformly tinted than the southern examples of this species usually are. Mr. Tutt, specimens of *Phigalia pedaria* (*pilosaria*) taken near Bradford by Mr. Butterfield, who reported the dark varieties as much more common this year than he had noticed before, and attributed the variation to scarcity of food, especially as the examples were small, thinly scaled and badly pigmented. Mr. Mansbridge said the black was of a different kind to that of the melanic specimens he had seen from the West Riding. Mr. Tutt reported that Mr. Clarke had taken *Tephrosia crepuscularia* this spring from the wood which Mrs. Bazett had asserted did not produce it, and so confirmed the statement made by Mr. Henderson last October. Rev. E. Tarbat also reported the species from woods near Reading. Mr. Turner, living larvæ of *Cleora lichenaria*, taken in Ashdown Forest, and remarked on their wonderful resemblance to the lichen on which they fed. He also made a few remarks on the district in anticipation of the proposed visit of the Society at Whitsuntide. Mr. Adkin, series of *Abraxas grossulariata*, bred from Perthshire larvæ, including a noticeable var. with fore-wings having a broad white central band with a large circular black discoidal spot, and hind-wings also having a large discoidal spot. A paper, entitled, "Representative Species," by Professor A. Radcliffe Grote, A.M., was then read by Mr. Tutt. It showed at some length the identical and parallel species which existed in the two continents. The evidence pointed to a continuous land connection between the nearctic and palæarctic regions. Mr. Tutt said that he had no doubt that the two faunas had been distributed from the circumpolar region while a subtropical climate existed there. It was announced that the Proceedings for 1896 were now ready for distribution to Members.

April 8th, 1897.—The President in the Chair.

Mr. South exhibited the following *Geometridæ* from Europe and East Asia:—*Eustruma reticulata* and var. *arosa*, the latter larger and more golden-yellow; *Cidaria silaceata*, Chinese specimens, both larger and smaller than European; *C. corylata*, Eastern examples very similar; *C. picata*, some Chinese specimens, larger and more yellow; *Melanippe procellata*, some were larger than European and some with ground colour suffused with a fuliginous shade. Mr. Lucas, specimens of an exotic earwig, *Anisolabis annulipes*, which could be distinguished from other British species by two white joints near the tip of the antennæ. The distinctly ringed femora give it its specific name. It was found in 1894 at Tavistock, but the specimens exhibited came from Surrey. Mr. Adkin, a fine

series of red forms of *Tæniocampa gracilis* from the New Forest and Rannoch. Mr. Tutt read a most interesting paper, entitled, "Some Considerations of Natural Genera and Incidental References to the Nature of Species."—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *March 3rd*, 1897.—MR. R. TRIMEN, F.R.S., President, in the Chair.

Mr. George W. Bird, of the Manor House, West Wickham, Kent; Mr. Alfred H. Martineau, of Solihull, Warwickshire; Mr. Hubert C. Phillips, M.R.C.S., of 83, Shirland Gardens, W.; Mr. William A. Vice, M.B., of 5, Belvoir Street, Leicester; and Mr. Colbran J. Wainwright, of 147, Hall Road, Handsworth, Birmingham; were elected Fellows of the Society.

The Secretary announced that the Committee appointed to consider the question of the protection of British insects in danger of extermination, had unanimously resolved that it was desirable to form an Association, the members of which should agree to discourage, by their own example and by their influence, the excessive collecting of all those species of *Lepidoptera* which from their habits appeared to be in danger of extermination; that this resolution had received the approval of the Council, who would refer the matter back to the Committee, in order that definite proposals for the formation of such an Association might be drafted, and it was hoped to lay these proposals before the Society for discussion upon April 7th. Mr. Champion exhibited, on behalf of Messrs. Godman and Salvin, a portion of the *Elateridæ*, and the *Cebrioidæ* and *Rhipidoceridæ* recently worked out by him in the "Biologia Centrali-Americana." The *Elateridæ* included 531, the *Cebrioidæ* 29, and the *Rhipidoceridæ* 14 species, a large proportion of which were described as new. He also exhibited a specimen of *Eudectus Giraudi*, Redt., found by himself at Mendel, in the Austrian Tyrol, in July last. This is a rare European species of *Staphylinidæ*, a black variety of which (*E. Whitei*, Sharp) had once been found in Scotland, on the summit of Ben-a-Bhuird. Mr. Jacoby showed a Halticid beetle, taken in Mashonaland by Mr. G. A. K. Marshall, and remarkable for a prolongation of the hind tibia beyond the tarsal articulation, into a very long serrated process. Mr. Elwes showed a series of *Papilionidæ* of the *Machaon* group, from North America, including *P. Machaon* and *P. oregonia* from British Columbia, *P. Brucei*, *P. Bairdii*, and *P. Zolicaon* from Glenwood Springs, Colorado, and the latter species from British Columbia. He stated that there was a tolerably complete gradation from *P. oregonia* (= *Machaon*) through *P. Brucei* to *P. Zolicaon*, that none of the characters which had been relied on for separation were of real value, and that the structure of the genitalia afforded no assistance. Although *P. Bairdii* appeared to be very distinct in appearance and habits, it was associated with the other forms in Colorado, and Mr. W. H. Edwards stated that he had bred both *P. Bairdii* and *P. oregonia* from eggs of the same female of either of the two forms. Mr. J. J. Walker mentioned that he had bred *P. Zolicaon* from larvæ found on *Sium*, at Esquimalt, Vancouver Is., and that neither larva nor pupa was distinguishable from that of *P. Machaon*. Mr. O. H. Latter read a paper on "The prothoracic gland of *Dicranura vinula*, and other notes," in continuation of his previous communications on the subject. A fresh use of the formic acid secreted by the larva was described; it was employed to alter the silk secreted in spinning the cocoon, in order to convert it into the well-

known horny mass. If the acid was prevented from acting, as by supplying the larvæ with bits of blotting paper soaked in an alkali to be utilized in making the cocoon, the silk thus protected from the action of the acid retained its usual fibrous structure. Sir George Hampson communicated a paper on "The Classification of two sub-families of Moths of the Family *Pyralidæ*—the *Hydrocampinæ* and *Scopariinæ*."

March 17th, 1897.—The President in the Chair.

Mr. Henry Hague, care of the Clydesdale Bank, 30, Lombard Street, E.C., was elected a Fellow of the Society.

Mr. Butterfield, present as a visitor, exhibited a series of thirty-three male and six female *Phigalia pedaria*, taken near Bradford, Yorkshire, on February 14th to 17th, 1897. Twenty-one males were typical in having a greater or less development of transverse bars. The remaining twelve were without bands, and varied in colour from black to smoky-olive; they were decidedly less in point of size, ranging from $1\frac{4}{5}$ in. to $1\frac{1}{5}$ in., as against $1\frac{7}{8}$ in. to $1\frac{1}{2}$ in. in the banded forms, and were also poorer in scales and slightly deformed. He had only met with this variety once before in the last twenty years, and suggested that the eruption of small, black, and depauperized forms might have been produced by dryness and want of food in the larval conditions, the trees having been extensively defoliated in the preceding year. Mr. Tutt agreed with this view, in the course of the subsequent discussion. Mr. Porritt said that the melanic variety had occurred to his knowledge for several years in the Bradford district, and that similar varieties, *e. g.*, in *A. betularia*, showed no signs of depauperisation. Mr. Kirkaldy exhibited an example of the rare macropterous form of *Velia currens*, Fabr., taken at East Grinstead, and one of *Oicadetta montana*, Scop., from Brockenhurst. Mr. Burr exhibited a series of grasshoppers with red and blue hind-wings of the Family *Edipodidæ*, to show the remarkable variation in colour seen in this group. Red, blue, and yellow forms are found alike in the same species, the blue being due to the failure of the red pigment, and therefore an incipient albinism, the yellow being a further form of albinism. Mr. Champion communicated a paper on the *Elateridæ* and *Rhipidoceridæ* collected by Mr. H. H. Smith, at St. Vincent, Grenada, and the Grenadines, and exhibited the specimens. Dr. Forel also communicated a paper on the *Formicidæ*, collected by Mr. Smith in the same islands.—W. F. H. BLANDFORD and F. MERRIFIELD, *Hon. Secs.*

April 7th, 1897.—The President in the Chair.

The following Memorandum of an Association for the Protection of Insects in danger of extermination, which had been drawn up by a Committee appointed for the purpose and approved by the Council, was laid before the Society and signed generally by those present: "We, the undersigned, being desirous of protecting from extermination those rare and local species of Insects which are not injurious to Agriculture nor to Manufactures, do hereby agree, by our own example and by the exercise of our influence over others, to discourage the excessive collection and destruction of those species of Insects which from their peculiar habits are in danger of extermination in the United Kingdom.

"We further agree to accept for the purposes of this Association such list of

species in need of protection as shall be drawn up, and, if necessary, from time to time amended by the Committee of the Entomological Society of London appointed to that end."

The draft of alterations and additions to the Society's Bye-Laws, recommended for adoption by the Council, was read for the first time. Mr. McLachlan showed, on behalf of Mr. Gerald Strickland, a magnified photograph of *Brachycerus apterus*, obtained by direct enlargement in the camera, and extremely clear in definition and detail. Mr. Tutt exhibited some of the silk used by *Tephrosia bistortata* to cover its ova, and discovered by Dr. Riding. It was contained in a pouch at the extremity of the abdomen in the form of dense bundles about 2 mm. long, and resembling in miniature locks of wavy flaxen hair. Hitherto all such coverings were supposed to consist of scales from the anal segment. Papers were communicated by Prof. Miall, F.R.S., on "The Structure and Life-history of *Limnobia replicata*," and by Messrs. Godman, F.R.S., and Salvin, F.R.S., on "New Species of Central and South American *Rhopalocera*."—W. F. H. BLANDFORD, *Hon. Sec.*

SUPPLEMENT TO "A SYNOPSIS OF BRITISH *PSYCHODIDÆ*."

BY THE REV. A. E. EATON, M.A., F.E.S.

(Continued from 2nd series, vol. vii, page 211).

CLASSIFICATION OF SPECIES of the 4th SECTION OF PERICOMA.

A. Radius linked to or confluent with the cubitus at a distance beyond the anterior basal cell less than the cell's apical width.

- * Bristling hair wanting on the subcosta, præbrachial and anal nervures; its endings on the pobrachial branches and postical arranged in a re-entering angulate line with one another. Penultimate (15th) joint in the ♂ antennæ bulbous, with a short, cylindrical or filiform beak; scape clad with hair, mingled with a few short inconspicuous scales; 1st joint obovoid, slightly compressed; 2nd shorter and globular; 3rd subequal in length to the 4th, bulbous, with a tapering beak and an ample verticil of hair; the succeeding joints bulbous with filiform beaks; for articular appendages, an inner verticil of short, dense, soft hair or a pair of opposite expanded fascicles of hairlike scales. Superior ♂ genital appendages similar in pattern to those of species of the 3rd Section.

- A.** Bristling hair in parts of the wing extended beyond the shortest line drawn from the end of the subcosta to the end of the postical nervure; its endings on the posterior radius and cubitus distant from the radial bifurcation, and approximated to each other beyond its ending on the anterior radius, which is near the bifurcation; its ending on the anterior pobrachial opposite that on the posterior radius; that on the cubitus either in line with these or a little beyond them; its endings on the pobrachial branches and postical nervure in an obtusely or almost rectangulate line with one another, the angle re-entering.....27. *P. ustulata*.

A.A. Bristling hair wholly interior to the shortest line drawn from the end of the subcosta to the end of the postical nervure ; its endings on the radial branches and cubitus distant from the radial bifurcation, and approximated to one another in a slightly oblique line with that on the anterior pabrachial, which is the outermost ; its endings on the pabrachial branches and postical nervure disposed in an almost right-angled line with one another, the angle re-entering.....26. *P. fratercula*.

B. Radius confluent with the cubitus at a distance beyond the anterior basal cell equal to or greater than the cell's apical width. Bristling hair wholly interior to the shortest line drawn from the end of the subcosta to the end of the postical nervure.

† Bristling hair on the radius extended, if only for a short distance, beyond the bifurcation.

B. Bristling hair in most parts of the wing extended beyond the shortest line drawn from the end of the subcosta to the end of the axillar nervure ; wanting on the subcosta, præbrachial and anal nervures ; its endings on the radial branches and cubitus distant from the radial bifurcation, and approximated to one another in an oblique or subtransverse line nearly abreast of the end of the subcosta.

b. Endings of the ranks of bristling hair from the anterior radius to the postical nervure disposed in an obtusely, angulate, transverse, zigzag line, commencing and terminating opposite the end of the anal nervure, and having the salient angle at the cubitus, the re-entering angle at the posterior pabrachial. Penultimate (15th) joint in the ♂ antenna spheroidal, not beaked ; 16th small, globular and apiculate or bulbous ; scape densely squammate ; 1st joint elongate, about twice the length of the 2nd, which is obovoid ; 3rd joint short, subequal to the 4th, and provided with a well-furnished verticil of hair ; 3rd-14th joints bulbous ; the beaks, stout and tapering to about the 8th joint, become slender, and from about the 11th to the 14th filiform : for articular appendages, a dense inner verticil of long, fine, soft hair28. *P. caliginosa*.

b.b. Endings of the ranks of bristling hair from the anterior radius to the postical almost in a straight line with one another, receding successively posteriorly very gradually to a small extent inwards : ♂ unknown.....Species No. XIV, Alg.

B.B. Bristling hair wholly interior to the shortest line drawn from the end of the subcosta to the end of the axillar nervure ; wanting on the subcosta, præbrachial and anal nervures ; its endings on the radial branches and cubitus approximated to the radial bifurcation.

b.b. Endings of the ranks of bristling hair on the radial branches and cubitus placed as it were at three corners of a rhombus, having its fourth corner at the radial bifurcation ; the endings of those on the pabrachial branches and postical

nervure stand in a straight transverse line with the ending on the cubitus, a little interior to its ending on the posterior radius, which is the outermost. Penultimate (14th) joint in the ♂ antenna spheroidal, not beaked; 15th rather smaller, globular and apiculate or bulbous; scape densely squamate; 1st joint subovoid, subequal in length to the 2nd, which is globular; 3rd joint elongate, slightly stouter than the 4th and apparently longer, although (by micrometer) of the same length as it; 3rd-13th joints pastiniform, each furnished with a pluriserial outer verticil of hairs, and an inner verticil of denser, long, fine, soft hairs, enclosing articular appendages in the form of two opposite expanded, concave, ovate fascicles of coherent soft hair, similar to minute membranous striate grass glumes 29. *P. incerta*.

†† Bristling hair on the radius confined entirely to the stem (*præfurca*).

B.B.B. Bristling hair nowhere (unless on the postical nervure) extended beyond the shortest line drawn from the end of the subcosta to the end of the axillar; its ending on the radius conterminous with the stem, or very nearly so, and opposite or approximate to its ending on the cubitus. Penultimate (14th) joint in the ♂ antenna obovoid or spheroidal, not beaked; 15th apiculate; 1st joint short, obovoid; 2nd subglobular; 3rd ovoid or bulbous, with a short stout beak, shorter than the 4th joint, and furnished with a small verticil of hairs; 4th-13th joints bulbous, with the beaks long and filiform; articular appendages long, slightly oblique, curved subspirally half a turn.

♂³ Bristling hair wanting on the subcosta, radial branches, præbrachial and anal nervures; its endings from the radius to the postical nervure disposed in an obtusely, angulate, transverse line with one another, with the angle re-entering and at the anterior pabrachial nervure; 15th joint in the ♂ antenna very small; scape densely squamate Species No. XV, Alg.

♂³¹ Bristling hair wanting on the subcosta, radial branches, præbrachial, anal, and probably on the posterior pabrachial; its endings from the radius to the axillar nervure disposed in an oblique slightly zigzag line with one another, having obtuse salient angles at the cubitus and postical nervure; 15th joint in the ♂ antenna bulbous, associated with the last pair of articular appendages so as to appear amidst the surrounding hairs figure of 8-shaped; scape clothed with hairs and a few inconspicuous scales 30. *P. revisenda*.

27. PERICOMA USTULATA (Haliday, MS.), Walker.

P. ustulata, *idem*, Ins. Brit. Dipt., iii, 258 (1856); Etn., *ante*, 2nd ser., vol iv, 128, and vol. v, pl. iii, P. 27-27a (details).

Pobrachial bifurcation adjacent but exterior to the shortest line drawn from the axil of the radial fork to the end of the axillar nervure. Of the seventeen small black hair-spots (all within the region of bristling hair) enumerated in the Synopsis (*l. c.*), two or three near the base of the wing are often ill-defined or wanting; altogether there are reckoned 8, marking the endings of ranks of the bristling hair: 1 at the radial bifurcation, preceded by 1 on the radial stem; 1 on the cubitus near the same bifurcation, and 1 nearer the cross vein; 1 by the pobrachial bifurcation on the base of the anterior branch, and 1 at the base of the stem; 1 on the postical near this last bifurcation; 1 on the axillar nervure adjacent to the fold of deflection, and 1 at the end of the anterior basal cell. The short appressed blackish hairs at the endings of the nervures do not constitute conspicuous spots. Hair of the head and body similar in tint to the lighter parts of the wings; the tint warmer from some standpoints than from others, and darker on the notum. Legs light yellowish-brown, or tow colour, annulate or banded with dark brown or blackish-brown in six places, viz.: narrowly close to the tip of the femur; narrowly at the base, and more broadly in the middle, and close to the tip of the tibia (these annulations are sometimes confluent on one side of the tibia); broadly from near the base almost to the apex of the 1st joint, and again throughout the 3rd, 4th, and all but the extreme tip of the 5th joint of the tarsus.

Beneath the wings in both sexes, at the inner extremities of the subcosta and axillar nervure, on the nameless nervure incurrent from the inner margin, and on the nervures bordering the anterior basal cell, are some very narrow linear scales. Season, June to September.

Walker's collection did not contain any specimen of this species. The name *ustulata* is applied to this insect in the sense of the old-fashioned English term, "spark-ed," used to describe a spotted cow.

26. PERICOMA FRATERCULA, Etn.

P. fratercula, *ante*, 2nd ser., vol. iv, 128, and vol. v, pl. iii, P. 26 (detail).

Pobrachial bifurcation distinctly beyond the shortest line drawn from the axil of the radial fork to the end of the axillar nervure. The fascia and the spot on the axillar, mentioned in the diagnosis (*l. c.*), mark the endings of the ranks of bristling hair, the fascia being, however, completed posteriorly by the declinate hairs at the end of the axillar nervure. The cubitus should have been named, with the radial branches, as contributing hairs to the foremost spot. Apart from the spots, the bristling hair from certain standpoints matches with the light brownish-grey hair of the body and the longer of the hairs of the legs, but from other directions the hair on the notum between the wings is a darker brown. Legs dark brownish, glossed with the lighter colour narrowly at the tips of the tibiae and of the tarsal joints; with change of posture the gloss is liable to be more diffused, especially on the last four joints in the tarsus. Hair of antennæ medium sepia-brown.

The distribution of scales on the under-side of the wings is limited almost as in *P. ustulata*; but there are in addition similar scales, interior to the fold of deflection, on the inner border of the costa and on the posterior margin, as well as some on the mediastinal nervure. Season, May, June, August, and September.

Reference has already been made to the resemblance between this species and *P. morula* (Subsect. C, 25), which likeness suggested its name. In the field, the place of insertion of the radius cannot, of course, be made out; but the difference in position of the pobrachial bifurcation, mentioned above, and the black spot of bristling hair on the axillar standing inwards out of line with the other spots of bristling hair, suffice for the recognition of *P. fratercula* while in the tube of the collecting bottle.

28. PERICOMA CALIGINOSA, Etn.

P. caliginosa, *ante*, 2nd ser., vol. iv, 128, and vol. v, pl. iii, P. 28 (detail).

Bifurcation of the pobrachial nervure distinctly interior to the shortest line drawn from the axil of the radial fork to the end of the axillar nervure. The fascia across the bases of the forks marks the exterior limits of the ranks of bristling hair from the anterior radius to the postical nervure; it is interrupted at the præbrachial and anal nervures (where the hair is smooth and not denser than elsewhere), and is completed posteriorly by the dense decumbent hairs beyond the bristling hair on the axillar nervure. Except on the mediastinal nervure, a well-marked parting divides the bristling hair from that beyond it, and the exterior hairs next to the parting lie outwards in fascicles so as to produce the outer fascia from the end of the postical nervure, which is interrupted at the præbrachial nervure; beyond this fascia the hairs spread more thinly, except just at the endings of the pobrachial branches and præbrachial nervure, where they again lie close together in the usual fashion; fringes very long towards the base at the posterior margin, and long at the base of the costa. Hair of the head and body fuliginous, very long at the sides of the abdomen; ♂ genitalia of the usual pattern. Hair of the antennæ warm sepia-brown; indumentum of the scape in the ♂ black, spreading at the apex of the 1st joint. Legs black-brown or fuliginous, with a relatively dull gloss on the tarsus.

Beneath, at the base of the wing, the distribution of scales in both sexes is much the same as in *P. incerta* (29), *q. v.* Season, June to August.

Psychoda bicolor, Banks, "The Canadian Entomologist," xxvi, 333 (1894), may be suspected to be related in some degree to *P. caliginosa* and its kindred; but the descriptions of this author are too pre-Schinerian in style for purposes of classification, and leave open the alternative possibility of its having nearer affinity with species scheduled above under *Pericoma*, Section III, Subsection E, especially with the Algerian species No. XIII.

29. PERICOMA INCERTA, Etn.

P. incerta, *ante*, 2nd ser., vol. iv, 128, step 3a, and vol. v, pl. iii, P. 29 (detail).

Pobrachial bifurcation very little interior to the shortest line drawn from the axil of the radial fork to the end of the axillar nervure. The broken light haired or

tow-coloured band from the radius to the postical nervure, and the like-coloured tuft before the end of the axillar nervure, mark the endings of ranks of the bristling hair, which, as in *P. caliginosa* (28), is distinctly parted from the exterior smoother hair; the hairs immediately exterior to the parting lie hardly so close together as in that species, and hence produce a less distinctly defined, dark, transverse band; the small patch of the lighter colour at the base of the wing, extending outwards to about the fold of deflection, and to the end of the basal cells, matches with the long dorsal hair of the abdomen, includes the fringes of the alulæ and the fringe of the costal radicle or callus, while, beyond the fold, the costal fringe remains dark; the broad, dark haired interval between this patch and the light haired band is backed by scales on the under-side in the male, but by flattened hairs in the female. Indumentum of the head, palpi, scapes of the antennæ, and the bases of the long hairs surrounding, on the anterior portion of the notum, a rounded patch of elongate, appressed, glossy white scales, blackish or rich sooty-brown in the male; the remaining pubescence of the notum from many standpoints is of a light colour, slightly browner than that of the dorsum in this sex; but in the other sex all matches in colour with the dorsal pubescence from the vertex of the head to the metanotum. Hair of the flagellum of the antenna warm sepia-brown. Ventral pubescence and indumentum of the legs sooty-brown or brownish-black; the legs without lighter markings, but the tibial and tarsal fringes glossed from some standpoints with tow colour.

Beneath the wings in the ♂, for some distance from the wing-roots, all of the nervures are clad with linear-obovate or linear scales, and some are distributed along the inner edge of the fringes at the commencement of both of the margins; long, acuminate, flattened hairs succeed the scales, and then follows hair of ordinary texture, commencing nearly beneath the inner border of the light haired band. In the ♀ the scales are more restricted in their outward range. Season, May, June, and August.

30. PERICOMA REVISENDA, Etn.

P. revisenda, ante, 2nd ser., vol. iv, 129, and vol. v, pl. iii, P. 30 (detail).

Pobrachial bifurcation distinctly interior to the shortest line drawn from the axil of the radial fork to the end of the axillar nervure. General hue of the wings varying, with change of illumination, from light greyish-brown to fawn colour; costal fringe dense, and from some positions browner beyond the fold of deflection than the disc, while the fringe of the costal root or callus becomes blackish towards the roots of the hairs, the disc appearing so thinly hairy as to present the aspect of an iridescent wing, with brown fringes and blackish markings, blue predominating in the iridescence; from other standpoints, the fringes partly or entirely match in colour with the disc, or the bristling hair can be made to match with the lighter hair of the thorax; the parting between the bristling hair and the smoother hair is less manifest than in *P. caliginosa* (28), and the pair of blackish spots at the parting lie in the smoother hair. From certain positions the wing-margin is defined by a thin dark line, set off by a light gloss on the short hairs at the base of the posterior fringe. Pubescence of the head and thorax light fawn colour, or whitey-brownish-grey; that of the abdomen readily assumes the same tint, although changing as

readily in most parts to blackish-grey when shifted about. The legs are of the same light or dark colour throughout, the hue depending upon the age of the specimen; the gloss on the tarsus at the best is dull.

Beneath, at the base of the wing in both sexes, scales are limited in their distribution almost absolutely to parts interior to the fold of deflection, the exceptions being a few very narrow linear scales at the very commencement of the posterior margin, and some on the nerve-roots bordering the anterior basal cell. Season, September; an earlier brood has not yet been observed.

This species, as stated previously, might easily be mistaken for a small form of *P. soleata* (21); but the difference in the texture of the pair of dark spots—smooth-haired in No. 30, ruffled-up in No. 21—facilitates their distinction.

SECTION V OF PERICOMA; British species, Nos. 31 and 32.

Refer *ante*, 2nd ser., vol. iv, 32, step 5, and vol. v, pl. iv, P. 31 (details).

Affinities, according to the place of confluence of the radius and cubitus, and to the distribution of bristling hair on the wing, nearest with *Pericoma*, IV, B †, as previously stated in the Affinities paragraph under that head. In the matter of the prothoracic air-nipples, persistent in the male fly, and in the character of the indumentum beneath the wings in this sex, the present Section has something in common with *Pericoma*, III, B. The shortness and equality in length of the basal cells are marked features, in which it is approached by *Psychoda*, I. The form of wing no doubt had most to do with the position assigned to these species by Haliday and Van der Wulp or Schiner, who rank them between *Pericoma*, I, and *Uatomyia*.

In the Synopsis, *loc. cit.*, the number of joints in the antennæ is mis-stated: and before the synonymy of the species mention ought to have been made of the persistent prothoracic air-nipples of the male fly, which are claviform and clad with appressed scales. Antennæ in ♂ 16-jointed: the scape squamate with elongate scales (black in these species), and the flagellum furnished with whitish-grey or very light sepia-grey or fawn coloured hair, the colour changing with the pose: 1st joint obovoid-oblong, not quite one and half the length of the 2nd, which is subglobular: 3rd joint hardly shorter than the 1st, and very little longer than the 4th, ovate, tapering to a short, stout beak: after the 3rd joint the remainder diminish very gradually in stoutness without much difference in length, and by a gradual lengthening of the beak become fusiform-ovate: the beaks nowhere exceed three-eighths of a joint in length, and after the 12th joint gradually shorten; hair arranged in pluri-seriate verticils, that leave the tapering

base and beak of each joint glabrous; the verticils at first cupuliform, but increasing and afterwards diminishing in amplitude *pari passu* with the length of the beaks, and, therefore, widest and shallowest from the 8th to the 12th joints. Articular appendages of the flagellum present in the form of concave digitate fascicles of capillary filaments, difficult to distinguish from an interior verticil of soft capillary scales, unless the hair be partly removed.

Bristling hair of the wing wholly interior to the shortest line drawn from the end of the subcosta to the end of the anal nervure; wanting on the subcosta, præbrachial and anal nervures in both sexes, and in the ♂ of one species wanting also on the axillar, but when present on this last nervure extended farther in the ♀ than in the ♂; its endings from the anterior radius to the postical nervure lie in an obtuse salient curve or angulate line with one another, having the angle or the summit of the curve on the cubitus.

Whenever generical dismemberment of the current genera *Pericoma* and *Psychoda* comes to be executed, it would seem from their bibliography that *Pericoma* should be restricted to species of the present Section, and *Psychoda* to species syntypical with *Ps. phalanoides*, L. A rather different employment of these names was proposed by Mr. N. Banks, in "The Canadian Entomologist," xvi, 329 (1894), and Westwood previously, in his "Introduction to the Modern Classification of Insects," cited in the General Synopsis quite a different insect as the type of *Psychoda*; but the disposal of these names seems to be governed by the publications of Curtis and Haliday.*

* Curtis, in British Entomology, xvi, 745 (1839), to illustrate the genus *Psychoda* of older authors, which was co-extensive with *Psychodidae*, published a whole figure with details of *Ps. sezzpunctata*, Curt., and some details of one or possibly two other larger species of the Family, notably T. thorax and head in lateral profile (omitting parts of appendages) of *Ps. auriculata*, Hal., MS., exhibiting a pair of persistent prothoracic air-nipples, and fig. 9, a wing of (one would suppose) the same species. In the accompanying text *Ps. sezzpunctata* is described, and on the next page follows an abstract synopsis of the British species of *Psychoda* by Haliday, in which are scheduled four genera, lettered A to D, and ten species numbered consecutively, irrespective of the genera. Of these, A, *Saccoteryx* (= *Ulomyia*) is an offset of the ancient *Psychoda*; B is the residuum of *Psychoda*; C, *Trichomyia*, and D, *Sycorax*, are new forms. The list of species under B, *Psychoda* is headed by 2, *auriculata*, Hal., MS.; and among the remainder, 3, *ocellaris*, Lat., Meig., 5, *nubila*, Meig., 6, *sezzpunctata*, Curt., and 8, *phalanoides*, L., D. G. (with *8bis nervosa*, Schr., the last, may be cited to show the plan of classification).

Haliday subsequently, in Walker's *Insecta Britannica*, Diptera, vol. iii (1856), established two genera. In place of the B, *Psychoda*, of 1839, and making them precede *Ulomyia*, re-adjusted the sequence of the species accordingly; the plates are by Westwood. The first genus, *Psychoda* (restricted), comprised two species, viz.: *Ps. phalanoides*, L., and *sezzpunctata*, Curt., mention being made of a third, *humeralis*, Meigen; the second, *Pericoma*, Hal., MS., eleven species, commencing with acute-winged and ending with broad and obtuse-winged species, some of those with acute wings being ranked here with hesitation (instead of in *Psychoda*), pending fuller investigation. It will suffice to cite in this place (2) *P. solcata*, Hal., MS., p. 257; (4) *ocellaris*, Meig., and (5) *canescens* (= *notabilis*, Etn.), p. 258; (8) *palustris*, Meig. (quoting as synonymous *auriculata* [Hal., MS.], Curt., B. E., 745), p. 259; (9) *nubila*, Meig.; (10) *fusca*, Macq., and (11) *calceata*, Meig., p. 260. The synonymy attributed to the species of *Pericoma* concerned in Curtis's figures is misleading; *auriculata*, Hal., MS., could not have been the *palustris* of Walker's volume, because this species has no prothoracic air-nipples in the adult; nor can the wing in question belong to the *P. canescens* (*notabilis*, Etn.) of the same work, as is alleged at p. 254, being quite of a different form to the wing of that species. It concerns, in fact, a species of the present 5th Section of *Pericoma*, and there is no reason why both the figure of the wing and that of the head and thorax might not have been drawn from one and the same individual fly. The main point, however, is that at p. 254 reference is made to Curtis's dissections of a *Pericoma* in B. E., 745.

31. PERICOMA FUSCA, Macquart.

♂.—*Psychoda fusca*, Macq., Ins. Dipt. Nord France [110 (1824)], or 167 (1826); *id.*, Hist. Nat. Ins. Dipt. (*Suites à Buffon*), i, 164 (1834).—*Ps.* † *tristis*, Zet., Dipt. Scand., xii, 4887 (1855), [*nec** Meig.].—*Pericoma* † *tristis*, Schiner, Fn. Aust. Dipt., ii, 634 (1864), [*nec** V. d. Wulp].—*P. fusca*, ! Etn., *ante*, 2nd ser., vol. iv, 32, step 5, and vol. v, pl. iv, P. 31 (♂ & ♀, details).

♀.—*Psychoda calceata*, Meig., Syst. Besch., vi, 272 (1830); Zet., Dipt. Scand., ix, 3706 (1850).—*Pericoma calceata*, Walk., Ins. Brit. Dipt., iii, 260 (1856); Schiner, Fn. Aust. Dipt., ii, 634 (1864); V. d. Wulp, Dipt. Neerl., i, 318 (1877).

♂. Base of wing, interior to the parting of the bristling hair from the smoother hair, darkened by the indumentum of the under-side, and so contrasted with the further portion in depth of tint, much as if the hair had been thinned out with a squeeze. The dark spots contiguous with the parting contrast in this sex only very faintly with the other bristling hair, yet form an abbreviated broken transverse band, narrowed posteriorly and touching the axil of the radial fork, but well beyond that of the pabrachial nervure. Axillar nervure in this sex without bristling hair, tabescent and slightly undulate, with the rising arch exterior to the hollow: anal nervure arched a little more strongly from the cross vein to the margin and gently sinuate across the curvature; both nervures clad with long, prostrate, tristichous hair, the middle rank overlying the nervure, shorter than the others that are spread outwards from it and applied to the membrane. Subcosta for some distance beside the stem of the radius, in high relief, a narrow fold in the membrane intervening between them, as usual. Fringe of the alula dense and remarkably long (the longest hairs would reach from the radial bifurcation to the end of the axillar nervure), constituting a well-furnished fascicle or tuft of brown hair, which appears to be laid along the axillar area (the fringe of the margin thereabouts being deflected) and is a little longer than that area. Hair of the humeral tuft and commencement of the costal fringe, long, very dense, and spreading.

At the base of the wing, beneath the region of bristling hair, all the nervures are squamate: from the radius to the postcal nervure the scales are of moderate length, linear, at first subobtusate, then acuminate, distichous, divergent, and partly subsecond, partly appressed to the membrane; farther out the scales are succeeded for a short space by flattened hair and this by ordinary hair likewise distichous. On about the first half of the subcosta the scales are of similar form, but very dense,

and that the wing there figured is stated to be that of a *Pericoma*; while to illustrate the two genera here under consideration, Westwood, in pl. xxvi, figures certain details of *Psychoda sexpunctata*, Curt., and the head and thorax "of a *Pericoma* (after Curtis)."

In Walker's cabinet, under the label *Psychoda palustris*, are three rows of four specimens each, composed altogether of six specimens of *Ulomyia fuliginosa*, four of *Pericoma nubila*, and two of *P. notabilis*—a ♂ at the beginning and a ♀ at the end of the lowest row. So perhaps the citation of *auriculata* under (8) *palustris* in his book may have been Walker's doing, on the supposition that the ♂ *notabilis*, because of the air-nipples, must have been Haliday's insect, regardless of the form of the wing, and without troubling to compare the specimen before him with the description of *palustris*.

* *Ps. tristis*, Meigen, Syst. Besch., vi, 272 (1830), measuring only 1 lin., is likely to have been one of the minor species closely resembling *P. solcata* (21). *P. † tristis*, V. d. Wulp, Dipt. Neerl., i, 319, on account of the position of the central cross vein and the length of the basal cell, is scheduled, *loc. cit.*, with *P. nubila* (8).

closely imbricate and appressed; then lying gradually looser they presently became distichous and acuminate: on the mediastinal nervure the scales are distichous, more slender and longer; and along the opposite part of the costa interior to the fringe are some rather shorter slender scales lying obliquely. Anal nervure as it were beautifully plumose, being beset near the base with extremely long, compressed, capillary scales succeeded gradually by very long, silky hairs, arranged (both scales and hairs) in two divergent crowded ranks: the anterior rank slanting forwards; the posterior, longer and denser, pendant and in length subequal to the neighbouring portion of the marginal fringe. Axillar nervure also with distichous scales and hair much shorter than those last mentioned or the fringe; the scales acicular, and the hair very fine and silky.

Fringes or beard of the hinder pairs of legs dense long and shaggy on the tibia, and dwindling on the 2nd tarsal joint to nothing: on the sole, the gloss at the tip can be made to extend to the 4th joint. In the fore leg, the coxa in front and the femur beneath are densely bearded with long acicular or linear scales.

♀. The dark blotch upon the radial branches does not extend inwards to the bifurcation. Axillar nervure of normal strength, slightly sinuate, clad in its basal half with bristling hair. Fringe of the alula in no way remarkable. Beneath at the wing-roots are some acuminate scales, restricted almost entirely to parts interior to the fold of deflection, and succeeded almost immediately beyond this by flattened hairs of ordinary character and arrangement.

The contrast between the white gloss of the last four tarsal joints in the ♀ and the sombre tint of the three penultimate joints in the ♂, caused all previous authors to reckon the sexes distinct species: but Zetterstedt possibly overlooked it in specimens he caught *in cop*. The accompanying differences in the contour and under-clothing of their wings are also very remarkable.

After discovering the confusion of species of this Section, mentioned *ante*, 2nd ser., vol. vi, 209 (Sept., 1895), much difficulty was experienced in adjudicating finally upon their respective synonymy, and in the meanwhile one working-hypothesis after another had to be reluctantly abandoned. For a short time the possibility of reviving Meigen's name *calceata* for one of them was entertained: hence the superseded nomenclature issued in Mr. Richardson's note, *supra*, p. 65 (March, 1896). But a few days later, opportunity was taken to examine Mr. Dale's collection in order to see whether any specimens were still extant likely to be those referred to by Haliday under this name in Walker's work, his reference governing its application. Both of the species occur at Glanvilles Wootton, and both were intermixed under one label in the cabinet; but the only specimens among them mounted on old fashioned pins of ancient date were a male and a female of the present species. At the same time on comparison of Curtis's figure of the wing with actual specimens, it was recognised as a representation of the wing of a male of the next species: hence

the synonymy now promulgated. Among the specimens referred to in the volume for 1895, p. 209*, those labelled Seaton, or Penselwood Common, belong here.

32. PERICOMA AURICULATA, Hal. MS.

Psychoda auriculata (Hal. MS.) Curt. Brit. Ent., xvi, 745, fig. 9 (wing), and probably fig. T. (1839), [undescribed].

Pericoma ‡ *fusca*, Walk., Ins. Brit. Dipt., iii, 260 (1856); ? V. d. Wulp, Dipt. Neerl., i, 318 (1877).

♂. Base of wing, interior to the parting of the bristling from the smoother hair, subequal in depth of tint to the region beyond: a broad band of dark hair, faintly defined, extends along the parting from the anterior radius to the postical nervure, without quite touching the axils of the forks, and except at its commencement (where it is narrowed a little) maintains a tolerably even width. Anal and axillar nervures from certain standpoints rendered more noticeable than the other veins through a difference in their under-clothing; the former rather more prominently arched than the latter and inclined slightly backwards; the axillar above, clad in its basal half with bristling hair. Fringe of the alula in no way extraordinary; the longest hairs would not reach beyond the limit of the bristling hair on the last nervure: marginal fringe of the concave axillar area more or less obliquely deflexed; the margin in this part scale-clad below the fringe, with the scales for a short distance at its commencement imbricate and subappressed to the border, but soon divergent in two ranks,—one rank lining or mingling with the hair of the fringe and composed of acicular scales hardly half the length of the hairs; the other rank, of shorter, very narrow linear scales, obliquely appressed to the membrane. Axillar and anal nervures, beneath, also squammate throughout; the scales for the most part linear, distichous, obliquely divergent and secund, or reclinate upon the membrane, but becoming freer and acuminate towards the end of the anal, and finally hair-like. Anteriorly the scales are acuminate from the commencement, and gradually become more and more restricted in extent, giving place to flattened hair, succeeded by ordinary hair much sooner than in *P. fusca*; hence the wing of the ♂ in *P. auriculata* has a more feminine aspect than the wing of the other male, although lacking the dark spots of the female. Fringe of the costal callus, or humeral tuft, in well-preserved specimens, densely fasciculate and relatively very long, extending to subopposite the radial bifurcation, along and partly behind the fringe of the costa, in a way that makes this seem to be doubled back or somewhat revolute at its commencement. Gloss on the tarsus limited to the extreme apex of the terminal joint. In other respects very similar to *P. fusca*, and in general colouring quite as dark as the female of that species.

♀. Just like the female of *P. fusca* (31): identifiable by association with the male.

Haliday's description (*cf. P. ‡ fusca*, Walker, *op. cit.*) applies better to the present species than to No. 31, because he calls attention

* Walker's application of the name *P. fusca* was followed in *loc. cit.* To make the paragraph conform to the synonymy here adopted, the parenthesis alluding to the *Synopsis* should be transferred to after "Macquart."

to the clothing of the anal and axillar nervures, and *P. auriculata* ♂ is the one in which this is most noticeable in comparison with that of the other nervures. He uses, it is true, the terms "deep black hairs;" but the scales might readily enough be designated hairs by any one using a weak lense. A "hoary" gloss is apt to appear on the humeral tuft when the specimen is shifted about. The specimens that were formerly distributed under the synonym ‡ *fusca* can be readily identified by the localities Exwick or Stoney Stoke inscribed on the circular pin-labels in the donor's handwriting.

Walker in his *Notes on the Wing-bones of the Two-winged Flies*, "The Entomologist," vii, 127, fig. 22 (*Psychoda* [*Pericoma*]), published in 1874, gives a kind of synthetical-type figure of a wing. Taking for its outline the wing of possibly *Ps. phalænoides*, L., he seems to have devised a parody on the neururation of *P. ocellaris*, Lat., for the interior details. The anal nervure is a secondary vein, connected at its inner extremity with the axillar and linked to the postical nervure some distance out; while this last in its turn is linked at its inner end to the pobrachial nervure alone. Hence the posterior basal cell has a wide, oblong, truncate cusp. At the inner end of the præbrachial nervure, the cross veinlets diverge from each other at an acute V-like angle. The mediastinal vein is produced beyond the cross veinlet, almost to the costa, and the part beyond the veinlet is at least twice, if not more than twice, the length of the nearer portion.

(To be continued).

FURTHER NOTES ON THE BRITISH SPECIES OF THE GENUS *SOLENOBIA*.

BY C. G. BARRETT, F.E.S.

My remarks upon species of this genus, as represented in these islands, in 1895 (*Ent. Mo. Mag.*, vol. xxxi, p. 163), procured me valuable help from several friends, for which I am very grateful.

Mr. J. W. Sidebotham, M.P., brought, in the first place, the specimens which, in his late father's collection, represent the species known here as *S. triquetrella*. These (also referred to by Dr. Chapman, *ante*, p. 79) are, unfortunately, only females, but with them are the cases in which they had lived, with the pupa skins still protruding from them, as is the curious habit of the females in certain species of the present genus. In the absence of any male specimens, it is difficult to determine their species.

Afterwards, Mr. Sidebotham most kindly brought the long series from his father's collection which represent *S. inconspicua*, and that representing a possibly

new species, at the same time remarking that although he had given them a careful examination, he had failed to find any specific distinction. Of these series, one consists of 18 males, 5 females, and some cases, the other of 22 males, 11 females, and some cases. The first series is labelled, "Millstone grit stones, Brushes, near Manchester;" the second, "*Inconspicuella*, tree boles at Prestwich Wood." Here, then, precisely, are the two forms referred to by Edleston (*Intelligencer*, vol. v, p. 146): "Herewith I send for your examination six bred male specimens of *S. inconspicuella*, and a card with females and cases, also seven males of my *triquetrella* (partly bred), and three females and cases. The cases of *inconspicuella* are found here on *beech trees* in Prestwich Wood, and the moths appear early in April, and are most sluggish creatures. The cases of *triquetrella* are found on large millstone grit stones on the moors (occasionally on stone walls); in order to get them it is necessary to turn over these big stones (not a very easy job), as these little rascals prefer the side nearest the ground. These insects appear in the perfect state from May 1st to 20th, and are *very active* on the wing; and what is *very singular* in this genus, one rarely gets a female. The female chrysalis is seen projecting from the case, the insect is missing; what females I possess are chiefly bred; the anal aperture in the female is considerably less woolly than in *inconspicuella*."

As Mr. Edleston's collection ultimately passed, I believe, into the possession of Mr. Joseph Sidebotham, there can be, I think, little or no doubt that the specimens now before me are actually those with reference to which the above remarks were penned, and their appearance amply confirms the (editorial) remarks of Mr. Stainton at the end of the article of which I have quoted a portion: "On a close scrutiny of the insects sent, and a comparison of Bruand's work, we have come to the conclusion that the *triquetrella* of that author is in point of fact our *inconspicuella*—the *triquetrella* of the German authors being a larger, darker, insect—and we cannot ourselves distinguish the *triquetrella* of Mr. Edleston from his *inconspicuella*, individual specimens of the former differing more from one another than they do from *inconspicuella*." This last statement is emphatically true. There are two or three specimens in one of the series in which the purplish-grey colouring of the nervures and reticulations is so spread over the fore-wing that the pale spaces are obscured, in one of them quite lost, whereas no such difference exists in the colour or markings of the two series. One important point, touched upon by Edleston, seems to have been ignored by Bruand, and even by Stainton, since nothing is said of it in the "Manual," nor in the "Insecta Britannica, Lepidoptera, Tineina." This is the woolly patch near the termination of the abdomen in the female. This woolly tufting, as will be recollected, is found in the females of the genus *Fumea*, as a ring at the extremity, and gives them a very curious appearance. In the two series under notice a great uniformity exists in the appearance of a woolly or downy patch—not round the anal segment—but on its under-side, and that of the penultimate segment, and as this patch is of a pure satiny-white, it is readily observed under a lens, and is, in fact, so conspicuous that I cannot understand Edleston's statement that in one series this is considerably less woolly than in the other! To me they appear identical. The same patch is visible in my own series of ♀ *inconspicuella*; and so far as the evidence at present goes, I think that Mr. Sidebotham is justified in the opinion that all the specimens of these two series belong to one species—our *inconspicuella*. In all these females the ovipositor is much protruded, the third telescopic joint being

in many of them visible. In this respect, among others, the three females labelled *triquetrella* differ altogether. They are broader in shape, and the anal segment is finished off by a broad triangular blackish plate, beyond which in neither instance is the ovipositor visible; moreover, there is apparently no such broad white downy patch on the under-side of the abdomen, as in *inconspicuellæ*, and only a faint indication in one of them of a *ring* of downy scales; the head and attendant plate in these are shining brown, and except that they are a shade larger, they agree in other respects, as Dr. Chapman has pointed out, with ♀ *inconspicuellæ*. But when the card upon which these three ♀ specimens are gummed was turned up, there appeared upon its under-side this (quite unexpected) inscription, "Pentland Hills, ♀," and upon examining the card upon which the accompanying *cases* are gummed, the same inscription appeared, with the further information, "by Logan." All which shows, or appears to show, that instead of the supposed *triquetrella* having occurred near Manchester, they had, so far as these specimens were concerned, been obtained by Mr. R. Logan, of Duddingstone, Edinburgh, on the Pentland Hills! This was a surprise—and a hint. I wrote at once to Mr. Wm. Evans, of Edinburgh, to whom I am indebted for much of what I know of the *Micro-Lepidoptera* of the Forth district, and begged him to turn his energies in this direction. Promptly and repeatedly he searched rocky places and walls on the Pentlands until he found *cases*, though but in small numbers, which he sent to me, accompanied by lichen and moss scraped off the stone surface where they were found. I did what I could for them, provided them with such fresh powdery lichen as could be obtained, kept the old food as fresh as I could, even (knowing the tastes of some of their allies) put in dead insects to tempt them to feed, but without success. One pupa protruded itself from its case, but the moth would not, or could not, emerge, and so far the result in this direction is failure. But I do not think that my friend will allow himself to be beaten in *one* season.

In the meantime Mr. A. H. Hamm, after much searching, had come upon a colony of *cases*, evidently of this genus, in the Reading district. He says: "The *cases* were found at the end of March, usually by searching at the foot of fences, but a few upon pieces of dead wood, and even stones. Some of the larvæ were fairly lively, walking about my box, but the majority were evidently in pupa. The ♀s commenced to emerge in the first week in April, and continued to appear until about the last week in that month. None came out in May. They commenced to deposit eggs almost directly they emerged, and I considered the eggs large for so small an insect. All duly hatched, the young larvæ constructing a case almost immediately, but I failed to induce them to feed." From the *cases* which he sent me also none but females emerged (and ichneumons, of course), not one male. Some degree of pleasurable excitement was caused in May by the appearance of a winged moth from among these *cases*, but it proved to be only a female *Xysmatodoma melanella*, of which the case is quite sufficiently like that of a *Solenobia* to be readily overlooked.

With reference to the females last mentioned, Dr. Chapman writes me: "Mr. Hamm has sent me specimens of a *Solenobia* of which he has only reared females, which, however, he tells me were freely fertile. The case is of a form very distinct from that of *S. inconspicuellæ* and (?) *triquetrella*. The pupa shell is distinctly smaller than theirs, and the colour is less ruddy, but I can find no definite structural difference. The ♀ has two more joints to the antennæ than they have; the tarsal

joints are the same. The seventeen joints of the flagellum of the antenna are all clear and distinct. In the *inconspicuell*a group (or species) the first three joints are not unfrequently, to all appearance, beginning to coalesce. In some specimens there are apparently no joints, but only depressions where the joints should be, and similarly the two penultimate joints seem to be uniting. The total length is not diminished, the articulation seems to be present, but ankylosed. Though the specimens are preserved ones, I think that these observations are correct, as similar appearances are not present in the other articulations. A case and pupa-case, apparently identical with these, has been sent me by Dr. Freer, from Rugeley."

In general appearance, these females differ from all the preceding, since in them the head, plate, and abdominal triangular shield are shiny black or brown-black, and the whole surface darker; in most of them the ovipositor also is black, and more or less protruded, but not to the length of those of *inconspicuell*a; the broad patch of white satiny scales is absent, but there is in some of them a narrow band of similar scales round the anal extremity. The cases are coal-black. I do not think that Mr. Hamm, either, will be satisfied without a further attempt to discover the male of this species. Probably the most likely method would be to look for them on the wing, but to reach a place several miles from home in time for such early risers as these is not always easy. Lord Walsingham tells me that, when recently in Corsica, the only time at which the species occurring there were to be found on the wing was at, and soon after, sunrise. So soon as the sun began to get hot they disappeared. Here the sun is not hot so early, and it will be remembered that Messrs. Bradley and Martineau took *S. Wookii* at 8 and 9 o'clock a.m.

My record during 1896 is of very little but failure, and I only note the results as a basis for future work, and a record of what has been attempted. That there is much yet to be accomplished is only too plain. Referring back again to the late Mr. Edleston's remarks in our old *Intelligencer*, I observe that he says: "These *Solenobia* are a very difficult group; it is impossible to know much about them without a deal of attention to their habits. Those from the cases found on granite rocks in North Wales may some time or other be bred. Another species occurs in extraordinary numbers on an old limestone wall between Conway and Llandudno; it is like none that I know of; I bred an apterous female out of a lot of three cases which I thought were not going to produce anything, and it was of a yellowish colour, and *exceedingly active* on its legs. Again, on some fir trees in the centre of a large wood at Rudheath, Cheshire, I met with some twenty cases from which I bred a single female. Then there are cases on beech trees, which I find at Dunham Park; for years these only produced females; these larvæ take two years to arrive at perfection." Adding to these the form which used to be found (and possibly exists still) in profusion on field fences near Brandon, and which produced females in plenty, but no males, we have a fair indication of work yet to be done in clearing up the question as to whether all these apterous females belong to one species (which hitherto we have, from faith rather than knowledge, called *lichenella*), or whether, as now seems probable, there is a series of such species.

I must not omit to notice one gleam of light in all this obscurity. In the collection of the late Mr. H. Doubleday, at Bethnal Green, there are, under the head of *triquetrella*, two male specimens, as well as females and cases. Unfortunately, as in the rest of the collection, these are not labelled, nor is there any indication in a catalogue, or elsewhere, of their origin.

These two males are six-tenths of an inch in expanse of wings—that is to say, about one-tenth broader than those of *S. inconspicuella*—a sufficiently noticeable difference in size in these minute creatures; and their fore-wings are a little broader, especially behind, so as to produce a fuller anal angle; colour whitish, with the nervures pale brown, and between them fainter regular cross-lines, which give it a delicately chequered appearance; very pretty, and devoid of the dusky clouding which sometimes obscures the reticulations in *S. inconspicuella*; hind-wings semi-transparent, whitish, with brownish nervures, but no cross reticulations; the nervures are furnished with rather long divergent scales; cilia rather darker at the apex; antennæ notched, brown; head and thorax rough from raised scales; female with well formed legs and antennæ, a glossy dorsal shield, and a very pure white anal tuft, beyond which the ovipositor sheath is short and broadly wedge-shaped. The cases are very black.

When I first saw these I thought it probable that this species was identical with Mr. Sidebotham's *triquetrella*, and that Mr. Doubleday had received male specimens from Mr. Logan, or else cases from which he had reared them; but this conclusion would appear to be unsound in view of a notice (forwarded to me by Mr. Evans) by Mr. Logan in the "Naturalist," 1852, p. 231, of finding "on May 13th, 1851, on the wall of a sheep-fold on the Pentlands considerable numbers of the cases of one of those singular insects called by the Germans '*Sack-tragers*,' the enclosed insects being still in the pupa state, but quite ready to burst their envelope, as all emerged in the course of a few days after, and were without a single exception females." "Without both sexes it is difficult to determine the species, but it would appear to be closely allied to the continental *Taleporia lichenella*." This, I fear, deprives us of all indication of the origin of Mr. Doubleday's specimens, and leaves this larger *Solenobia* to be re-discovered.

39, Linden Grove, Nunhead:

December, 1896.

P.S.—I append some notes on these specimens with which I have been favoured by Lord Walsingham:—

[We have examined your *Solenobia* with great care. Those from the millstone grit are decidedly the same as those from Prestwich Wood, and we cannot separate them from the true *inconspicuella*.

The three supposed *triquetrella*, ♀, appear to us to agree with a species sent to me by Rebel as *inconspicuella*. The case is identical, and the ♀ has the same olive shade. They are not *inconspicuella*, and they are not *triquetrella*, but are probably *Nickerlii*, Hein., which he rightly differentiates from *Wockii*, as well as from *inconspicuella*. The case of *triquetrella* is less triangular, and apparently always roughened at the end in the ♀, and more or less all over in the ♂. Mr. Hamm's Reading species appears to be quite distinct. The ♀ is blacker than that of *pineti*, although the cases are very similar. The cases collected by Mr. Evans at Pentland appear to be of the same species as those from Reading, but are decidedly distinct from those collected by Logan, also from the Pentlands. Little or nothing more can be done until males are bred of those species still unidentified. —WALSINGHAM.]

**THAUMATONEURA INOPINATA, A NEW GENUS AND SPECIES
OF CALOPTERYGINÆ.**

BY ROBERT McLACHLAN, F.R.S., &c.

At the recent sale of the collections formed by the late Mr. Reginald Cholmondeley, of Condover Hall, Shrewsbury, I obtained the few *Odonata*, solely on account of a large Calopterygine, which was evidently something unknown, but the remarkable nature of which I did not fully realize until after it came into my possession.

The former owner of the collection valued insects, and other natural productions, solely for their beauty or forms, and cared little for names, and nothing for localities, so I am unable to say whence this specimen came; but as the pin (or rather skewer!) was similar to those used for some other insects in the same collection which were Chinese or Japanese in origin, I hazard a conjecture that it may belong to the same region.

THAUMATONEURA, n. g.

*Head** broad; eyes large, globose, very prominent. *Thorax* robust. *Legs* moderate (only the anterior present). *Abdomen* slender, cylindrical (the apical portion absent). *Wings* elongate, broad, obtuse, *petiolated at the base to beyond the 1st nervule in the lower basal area*; afterwards the inner margin is gradually rounded to before the middle (more so in the posterior), and then slightly sinuate to before the apex. *Nodus* placed near the base, at about one-fifth of the length of the wing. *Pterostigma* large, dilated beneath, its inner edge very oblique, so that the lower edge is much longer than the upper. Only three to five ante-nodal nervules, of which only the first two are continued below the subcosta. Post-nodals very numerous. Post-stigmatal area densely reticulated. *Upper basal area empty, the lower with two nervules*. Quadrilateral regular, oblong, empty, slightly more than half the length of the upper basal area. Arculus angulated, its sectors separated at the base, the lower arising from about its middle, the upper slightly above. Nodal sector arising at about the middle of the length of the wing; sub-nodal at about the nodal point; the median before the nodus. *Post-costal area very broad*, much dilated before its extremity, owing to the arching of the second sector of the triangle, with many branches. Reticulation dense, especially on the inner margin; two to four long supplementary sectors interposed between each sector; all the sectors (including the supplementary and the branches in the post-costal area) strongly curved at their ends.

The insect on which this genus is founded has the aspect of a gigantic *Euphæa*, of the broad-winged group. There can be little doubt that it belongs to the Légion *Amphipteryx* of De Selys, and is perhaps most nearly allied to the genus *Amphipteryx*; but it differs

* The head has been detached, but apparently belongs to the insect.

from it (and its allies), and from any other known genus of recent *Calopteryginae*, in the position of the nodus, in which it shows a distinct analogy with the *Aggrioninae*. The form of the pterostigma is as in *Amphipteryx* and *Devadatta* (*Tetraneura*, Selys). The number of ante-nodals is practically as in the *Aggrioninae*, because the last two or three are finer than the others, and do not extend below the subcosta.

THAUMATONEURA INOPINATA, n. sp.

Adult ♂. *Body* deep black. A rounded orange coloured spot on the frontal orbits. *Pronotum* narrowly edged with orange at the sides. *Thorax* (damaged above) with four equidistant slender yellow lines on each side; one humeral, two lateral in the sutures, and one margining and continued round the pectoral area. *Legs* black (only anterior present), femora dingy yellowish, tibiae with long black spines. *Abdomen* bronzy, a fine yellowish, dorsal, longitudinal crest; the segments (after the second) with fine and close transverse corrugations.

Wings hyaline, with a very broad, dark brownish-black, opaque band (in which there are irregular pale points where the pigment has not developed) in all the wings, occupying the space from the nodus to beyond the middle (or more than one-third of the entire length in the anterior, and one-half in the posterior); internally the edge of this band is ill-defined, shading off gradually, and causing the otherwise hyaline basal portion of the wings to be somewhat smoky; externally it is well-defined, but irregular in the anterior, where it is excised below the costa, then roundly dilated, and afterwards somewhat concave; in the posterior the external edge is nearly regularly concave, with a slight projection before the middle; beyond this band the wings are hyaline. Pterostigma (length, $5\frac{1}{2}$ mm.) and reticulation black. About 70 post-nodals in the anterior-wings.

Length of abdomen (26 mm. to end of 4th segment*). Length of posterior wing, 48 mm. Greatest breadth of anterior wing, 13 mm., of posterior, 14 mm.

Hab. ? (China or Japan ?).

Lewisham, London :

May 15th, 1897.

ON THE OCCURRENCE OF *BLENNOCAMPA ATERIMA*, KLUG,
AT KEW.

BY DR. A. GÜNTHER, F.R.S., P.L.S., &c.

I first noticed this saw-fly in my garden at Kew in 1892† on a clump of Solomon's Seal, which I had obtained from a neighbour. No specimen of the insect had been noticed, then or before, in the original location of the plant, and there were only a few individuals in the

* From analogy the entire abdomen should be of exceptional length. There is nothing to indicate that the portion that remains has at any time been detached. This is mentioned because there were some extraordinary cases of "reparations" in the collection; for instance, an example of *Sieboldius Albardeæ*, Selys, with the abdomen of *Bachna cyanea*; and the curious *Stilbopteryx costalis* (*Myrmeleonidae*) with the head of an *Bachna* !

† Cf. W. F. Kirby, *Annals and Mag. Nat. Hist.*, xiii, p. 528 (1894).

year of its first appearance in my garden. By leaving the plants and the soil undisturbed the insects increased in numbers in successive years, so much so that last year I found it advisable to establish another colony at a distance from the first by planting a second clump and transferring some of the larvæ on it. In this I have been quite successful, flies on both clumps emerging this year on the same day, April 26th, about a week in advance of the usual time of their appearance; the males seemed to emerge a day before the females, and are much more numerous and active. However, even in the brightest sunshine, they never fly to a greater distance than a couple of yards from their food-plant. Pairing commenced the day following the first appearance of females. Our ordinary birds, tit-mice, robins, &c., will not touch this saw-fly, either in its larval or perfect condition.

If any of the workers at British saw-flies should wish to possess specimens, I will supply them with pleasure on receipt of a small box, but I cannot undertake to mount them. Should any one who happens to grow the food-plant wish to establish a colony, I have no doubt that I could spare 40 or 50 larvæ in about four weeks' time.

2, Lichfield Road, Kew Gardens :

April 29th, 1897.

OCCURRENCE OF *APTERYGIDA ARACHIDIS*, YERSIN (*FORFICULIDÆ*), AT QUEENBOROUGH, KENT.

BY J. J. WALKER, R.N., F.L.S.

In the "Naturalist's Journal" for March, 1897 (British *Orthoptera*, p. 17, t. 1, fig. 8), Mr. Malcolm Burr records the occurrence in Britain of the cosmopolitan earwig, *Apterygida arachidis*, on the strength of five examples taken by me last year in the Queenborough Chemical Works, and deposited in the National Collection. This earwig had for some time been familiar to me in my occasional visits to the works in search of *Coleoptera*, but, to my shame be it spoken, I had hitherto taken very little notice of it, beyond securing a few specimens for identification, which it has remained for Mr. Burr to effect. On going specially to look for the creature on the 9th inst. I found it quite plentiful, and in all stages of growth. It was most readily obtained by turning over the sacks of "greaves," or the fibrous residuum of meat which had been boiled down for tallow; and it appeared to have a decided preference for those sacks, the contents of which had been still further exhausted of their fatty matter at the

works by the agency of benzine. When disturbed, the *Apterygida* runs off into the nearest dark corner with great speed, and is altogether more rapid in its movements than its familiar garden relative; and from its rather soft and delicate texture it is by no means easy to secure without damage.

With it occurred a single very immature but fully grown example of another species of *Forficulidæ*, which Mr. Burr thinks may be *Anisolabis annulipes*, Lucas, recently recorded from Tavistock by Dr. Harold Swale (Ent. Mo. Mag., ser. 2, vol. v, p. 124). Most of the "greaves" I was informed were received from the London tallow melters to be converted into manure; but as many tons of bones from all parts of the world are stored in the same building, there can be no doubt that *Apterygida arachidis* is an imported insect, which will probably be found throughout this country if looked for in similar places. At any rate, like its Coleopterous companions, *Dermestes*, *Necrobia*, *Alphitobius*, *Omosita*, *Carcinops 14-striata*, &c., it finds a congenial home at Queenborough, and like them also is an insect of almost world-wide distribution. Mr. Burr (*loc. cit.*, p. 18) says, "It is a cosmopolitan species, being first described by Yersin from specimens taken at Marseilles. It was also found on the ship in the Novara Expedition (Brunner), and in New Guinea (Dohrn), Mombas, East Africa (Gerstaecker), and in Mexico, Burmah, Australia, Islands of Pacific and Indian Oceans, and various ports in Asia, Africa, and America (de Bormans)." The original specimens appear to have been taken among ground or pea-nuts (*Arachis hypogæa*). What I believe from memory to have been the same species used to occur commonly among our stores in H.M.S. "Penguin," but I regret to say that no specimens were preserved.

In conclusion, I may add that it will give me much pleasure to supply specimens of *Apterygida arachidis* to any entomologist who is interested in the *Forficulidæ*.

I am indebted to Mr. Burr for an account of its synonymy, which is as follows:—

APTERYGIDA ARACHIDIS, Yersin.

Forficula arachidis, Yersin, Ann. Soc. Ent. Fr. (3), viii, p. 509, t. 10, figs. 33—35 (1860); Scudd., Ent. Notes, v, p. 51.

Chelidura arachidis, Brunn., Prodr. Eur. Orth., p. 21.

Sphingolabis arachidis, de Borm., Biol. Centr.-Amer., Orth., p. 12; Ann. Mus. Civ. Genova (2), xiv, p. 406.

Apterygida arachidis, Burr, Brit. Orth., p. 17, t. 1, figs. 8, 8a (Nat. Journ., 1897).

Forficula Wallacei, Dohrn, Stett. Ent. Zeit., xxvi, p. 88 (1865).

Sphingolabis Wallacei, de Borm., Ann. Mus. Civ. Genova (2), vi, p. 448.

Forficula (Apterygida) gravidula, Gerst., Arch. f. Nat., xxxv, p. 221 (1866); Glied-Fauna Ins. Sans., p. 50, t. 3, fig. 9.

Sphingolabis gravidula, de Borm., Ann. Mus. Civ. Genova (2), xiv, p. 407.

Mr. Burr thus describes it:—Dark castaneous. Antennæ with 12—14 joints. Pronotum square, the lateral margins pale, and the hinder margins straight. Wings absent. Feet testaceous, the femora sometimes fuscous towards the base. Male anal segment square, impressed in the middle, with no tubercles; the branches of the forceps small, with a tooth inside at the base and another at the apex. Subgenital lamina hexagonal. Female anal segment like that of the male; branches of forceps short, curved in at the apex. Length of body, ♂ ♀, 8 mm.

Differs from *A. albipennis* in its darker colour and hairless body, and also in the position of the tooth on the forceps of the male.

23, Ranelagh Road, Sheerness:
April 12th, 1897.

OCCURRENCE OF *EXOMIAS (BARYPEITHES) PYRENÆUS*, SEIDL, AT PLYMOUTH.

BY G. C. CHAMPION, F.Z.S.

This insect, not hitherto recorded from Britain, has been found occasionally by Mr. J. H. Keys in the Plymouth district since the year 1888, and it appears to be not at all rare in several places in that neighbourhood. He has captured specimens of it at Radford, Lipstone Park, Bovisand, and Whitsand Bay—at roots of grass, in faggots, under bark, and also by beating hawthorn. *B. pyrenæus* is treated by Dr. Seidlitz (Die Otiorhynchiden, p. 73 [1868]) as a variety of *B. araneiformis*, Schrank (= *brunnipes*, Oliv.); but it is certainly a good species, and by no means confined to the Pyrenees, as he supposed. M. Bedel, who has been kind enough to compare one of the Plymouth examples with the types of *B. pyrenæus*, Seidl., which are contained in the Brisout collection in Paris, is also of opinion that it should be regarded as distinct. He informs me that he has taken it in the Forest of Cérisy, Calvados, France. The two species may be readily separated by the following characters:—

Rostrum in the ♂ strongly, in the ♀ feebly, dilated at the apex; prothorax with very coarse, deep, scattered punctures; elytra convex in the ♂, a little flattened on the disc in the ♀, coarsely seriate-punctate, the punctures not very closely placed, becoming much finer and shallower towards the apex, and placed in shallow striae, which are sometimes obsolete, the interstices flat or feebly convex; body glabrous, or very finely and sparsely pubescent...

araneiformis, Schrank.
(*brunnipes*, Oliv.).

Rostrum feebly dilated at the apex in both sexes, and also more parallel; prothorax somewhat closely and coarsely punctured, a narrow smooth space down the

middle excepted; elytra convex in both sexes, very coarsely and deeply punctate-striate, the punctures closely placed and the striæ deep to the apex, the interstices more or less convex; body distinctly pubescent, the elytral interstices each with a regular series of decumbent hairs.....*pyrenæus*, Seidl.

In both species the anterior tibiæ are incurved at the apex in the male, and straight in the female, and also emarginate on the inner side towards the tip. Dr. Seidlitz describes the rostrum as broader in *B. pyrenæus*, but this is due to its more parallel shape. From *B. pellucidus*, Schönh., apart from the more slender femora in the male, the present insect may be known by the shorter pubescence, this character also separating it from the European *B. mollicornis*, Ahr., the latter also having a more curved rostrum. I am indebted to Mr. Keys for living and dead specimens of *B. pyrenæus* for examination. M. Fauvel, too, has sent me an example from Caen; he says it is to be found in woods throughout Calvados.

Horsell, Woking:
May 8th, 1897.

THE *LEMA ERICHSONI*, SUFFR., OF BRITISH COLLECTIONS:
SYNONYMICAL NOTE.

BY G. C. CHAMPION, F.Z.S.

The insect standing under this name in British collections should be referred to *L. septentrionis*, Weise (= *Erichsoni*, Thoms., nec Suffr.), it agreeing much better with the description of the latter than with that of *L. Erichsoni*, Suffr. We have two forms of it:—one, found as yet only in Ireland, having the thorax pitchy-black; the other, found in the south of England, with the thorax metallic-green and the elytra relatively a little broader.

L. septentrionis is described by Weise (Naturg. Ins. Deutschl., vi, p. 63) as being "more slender than *L. Erichsoni*, Suffr., and nearly as elongate as *L. melanopa*, L.; sky-blue, the thorax darker, nearly black, the head generally greenish. The latter shaped as in *L. Erichsoni*, but rather more distantly, strongly, and deeper punctured. The thorax very similar to that of *L. Erichsoni*, but distinctly narrower and deeply constricted before the base, the constriction rather remotely impressed with deep punctures of different sizes, but more finely and evenly punctured at the sides, where the constriction is more shallow; the disc scarcely visibly and not closely punctured, very shining, with large punctures nearly arranged in rows towards the anterior angles and in three longitudinal rows on the middle. The elytra moderately shining, coarsely punctate-striate, the striæ deep, the interstices very narrow, partly touched by the punctures."

The British specimens agree sufficiently well with this description, the only important difference being in the colour of the thorax, which is evidently variable, as shown by the difference in this respect between the Irish and English examples. It has been suggested by Crotch, Fowler and others that the Irish insect is a "concolorous" form of *L. melanopa*, Linn.; but this is certainly not the case, as it differs from that species in its less elongate shape (this being particularly noticeable when a long series of both sexes is examined), and in having the thorax distinctly wider behind the constriction, and the femora less strongly clavate. The Irish examples before me show no sign of variation; they are from three sources—from Waterford (*Power*), Queenstown (*J. J. Walker*), and one sent me many years ago by the late R. Hislop, without precise locality.

Of the form with the metallic-green thorax I have seen three specimens:—one found by Mr. W. H. Bennett near Hastings; one found by Mr. Donisthorpe at Rye; and one, without locality, in Mr. Waterhouse's collection. There is also a single very old discoloured example of the same species in the Stephensian collection.

I am indebted to Herr E. Reitter for a specimen of *L. Erichsoni*, Suffr., and to Prof. G. Thomson for an example of his *L. Erichsoni*, for comparison. The latter was re-named *L. septentrionis* by Weise, and treated as a distinct species.

L. septentrionis is recorded by Weise from Müggelsee, near Berlin (whence I have seen two examples), and Southern and Central Sweden (*Thomson*); it lives on a species of *Nasturtium*. *L. Erichsoni*, Suffr., is very widely distributed in Northern and Central Europe, and also occurs in the Caucasus.

Horsell, Woking:
May 17th, 1897.

HINTS ON COLLECTING ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F. L. S.

(Continued from page 84).

As Midsummer approaches the best time for collecting Aculeates begins; it lasts till about the middle of August, and July is perhaps the best month of the whole year. Almost any locality now will produce something, so long as the sun shines, but localities should be chosen with care. It is probably a wise rule to consider what are the special features of the district to be collected over, and to collect as much as possible with reference to these. For instance, the main features of the part of Surrey where Woking is situated are its

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Besides these two species, which were the special objects of my search, I obtained eighteen *Bledius pallipes* along with the *B. subterraneus*, also one *Tachyusa scitula* and three *T. flavitarsis*; accompanying the *Bembidium* were a few *Elaphrus riparius*. Pressing down the mud close to the water's edge produced a series of *Heterocerus marginatus*, which rose to the surface and attempted to take flight.

A second visit to the same locality on the afternoon of July 19th produced, after two hours' collecting, twenty-seven *Bembidium paludosum*, one *B. femoratum*, one *Amara fulva*, thirty-seven *Bledius subterraneus*, six *B. pallipes*, ten *Tachyusa constricta*, seven *T. scitula*, six *Falagria obscura*, twelve *Heterocerus marginatus*, and two *Limnebius truncatellus*. From cracks in the banks two *Trechus discus*, one *T. secalis*, and seven *Clinina collaris* were obtained, whilst buried just beneath the surface of dry sand a single specimen of *Egialia sabuleti* occurred.—J. HAROLD BAILEY, 128, Broad Street, Pendleton: May 3rd, 1897.

Early appearance of Formica rufa.—I think it is worth recording the very early appearance of *Formica rufa*. I took twelve winged females running over the surface of a large hillock made by this species, in a wood near Shaughbridge on April 22nd.—G. C. BIGNELL, Stonehouse, Plymouth: April 27th, 1897.

The British specimens agree sufficiently well with this description, the only important difference being in the colour of the thorax, which is evidently variable, as shown by the difference in this respect between the Irish and English examples. It has been suggested by Crotch, Fowler and others that the Irish insect is a "concolorous" form of *L. melanopa*, Linn.; but this is certainly not the case, as it differs from that species in its less elongate shape (this being particularly noticeable when a long series of both sexes is examined), and in having the thorax distinctly wider behind the constriction, and the femora less strongly clavate. The Irish examples before me show no sign of variation; they are from three sources—from Waterford (*Power*), Queenstown (*J. J. Walker*), and one sent me many years ago by the late R. Hislop, without precise locality.

Of the form with the metallic-green thorax I have seen three specimens:—one found by Mr. W. H. Bennett near Hastings; one found by Mr. Donisthorpe at Rye; and one, without locality, in Mr. Waterhouse's collection. There is also a single very old discoloured example of the same species in the Stephensian collection.

I am indebted to Herr E. Reitter for a specimen of *L. Erichsoni*, Suffr., and to Prof. G. Thomson for an example of his *L. Erichsoni*, for comparison. The latter was re-named *L. septentrionis* by Weise, and treated as a distinct species.

L. septentrionis is recorded by Weise from Müggelsee, near Berlin (whence I have seen two examples), and Southern and Central Sweden (*Thomson*); it lives on a species of *Nasturtium*. *L. Erichsoni*, Suffr., is very widely distributed in Northern and Central Europe, and also occurs in the Caucasus.

Horsell, Woking:
May 17th, 1897.

HINTS ON COLLECTING ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F.L.S.

(Continued from page 84).

As Midsummer approaches the best time for collecting Aculeates begins; it lasts till about the middle of August, and July is perhaps the best month of the whole year. Almost any locality now will produce something, so long as the sun shines, but localities should be chosen with care. It is probably a wise rule to consider what are the special features of the district to be collected over, and to collect as much as possible with reference to these. For instance, the main features of the part of Surrey where Woking is situated are its

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A second visit to the same locality on the afternoon of July 19th produced, after two hours' collecting, twenty-seven *Bembidium paludosum*, one *B. femoratum*, one *Amara fulva*, thirty-seven *Bledius subterraneus*, six *B. pallipes*, ten *Tachyusa constricta*, seven *T. scitula*, six *Falagria obscura*, twelve *Heterocerus marginatus*, and two *Limnebius truncatellus*. From cracks in the banks two *Trechus discus*, one *T. secalis*, and seven *Clivina collaris* were obtained, whilst buried just beneath the surface of dry sand a single specimen of *Egialia sabuleti* occurred.—J. HAROLD BAILLY, 128, Broad Street, Pendleton : May 3rd, 1897.

Early appearance of Formica rufa.—I think it is worth recording the very early appearance of *Formica rufa*. I took twelve winged females running over the surface of a large hillock made by this species, in a wood near Shaughbridge on April 22nd.—G. C. BIGNELL, Stonehouse, Plymouth : April 27th, 1897.

Biorhiza terminalis.—In the last Monograph published on the Oak Galls it is stated that the King Charles apple, the gall so much sought after by boys, on May 29th, produces not infrequently wingless females. Never having obtained any such from galls collected in South Devon, I should be glad to receive galls of this species from any other part of England not later than the middle of June.—*Id.*

Hyetodesia vagans, *Fln., near Birmingham*.—Mr. Meade, in his new descriptive list of *Anthomyidæ*, says of this species, "I received a pair of typical specimens from M. Schnabl, of Warsaw, but have not seen an English one. I include it in the British list because it has been recorded by Walker and others." Having a small series in my collection which I considered represented this insect, I forwarded a pair to Mr. Meade for examination, and he returns them as quite correct, and very well marked specimens. The flies occur in Sutton Park at the end of May and beginning of June on palings. I have taken two males and five females. It is placed among the reputed species in Mr. Verrall's list, but may now be restored to its original position.—RALPH C. BRADLEY, Sutton Coldfield: *May 7th*, 1897.

Variety of Vanessa urticae.—A very beautiful variety of *Vanessa urticae* has just been brought to me for examination by Mr. Wallis Penn-Gaskell, a young gentleman who, to all appearance, has not as yet left behind the "lucky" stage of the young collector. In this specimen the second and third costal black spots are united by a purple-black cloud, the dorsal black spot is enlarged and angulated, almost diamond shaped; the two small black spots usually placed just outside it are totally absent, and the area in which they should lie is of a deep rich red with but faint trace of any yellow cloud; the blue spots of the hind margin are moreover pushed inward by an unusual breadth of blackened margin. In the hind-wings this last peculiarity is even more conspicuous, the black border being very broad, and, at the same time, the large black space from the base is so extended that of the usual orange-red space there is but a partial narrow band. Altogether the specimen approaches in colour, and absence of the two small black spots of the fore-wings, to the South European variety *Ichnusa*; but differs from it in the far greater extent of black margin and black surface in the hind-wings, in these respects approaching nearer to the variety figured by Noel Humphreys on the illustrated title-page of his "*Genera and Species of British Butterflies*." Of the present specimen Mr. Penn-Gaskell writes, "It was taken flying over the road leading to Ranmore Common from the Station at Bookham, Surrey, on June 27th, 1896. A good number of ordinary *V. urticae* were flying at the time about the flowers in a cottage garden close by."—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E.: *May 10th*, 1897.

Temperature Experiments and Hybridity.—The very remarkable series of specimens illustrating variation caused by temperature, exhibited by Mr. Merrifield and Dr. Standfuss at the Royal Society's *Conversazione* on May 19th, and also Dr. Standfuss' hybrid *Lepidoptera*, will be on view for a short time in the Insect Gallery at the British Museum (Nat. Hist.), Cromwell Road.—EDS.

Baron de Selys-Longchamps.—At the meeting of the Société Entomologique de France, April 28th, the death of my venerable friend was reported by the President. *It is happily untrue*; he is in perfect health.—R. McLACHLAN, *May 21st*, 1897.

Societies.

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *April 30th*, 1897.—DR. SHARP, F.R.S., President, in the Chair.

Dr. Sharp called attention to a peculiar structure which he detected some years ago in *Chrysinidia madagascarensis*, better known as *Urania rhipheus*. On each side of the second abdominal segment there is an ear-like opening, usually much concealed by overlapping scales, giving entrance to a chamber which extends to the middle line and forwards towards the base of the abdomen, so that a considerable space in the anterior and upper part of the abdomen is occupied by the chambers. At the anterior external part of this depression or chamber there is a second vesicle-like chamber formed by a delicate membrane. He considered this structure to be some kind of sense organ, and thought it must be of great importance to the creature, as it occupies a large area of the abdominal region. It is independent of sex, and apparently occurs in all the members of the Families *Uraniidæ* and *Epiplemidæ*. M. Oberthür had kindly supplied him liberally with dried specimens for the examination of this organ, but fresh individuals, or some well preserved in spirit, are necessary before any of the finer details of the structure can be ascertained.—L. DONCASTER, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *April 22nd*, 1897.—R. ADKIN, Esq., F.E.S., President, in the Chair.

Mr. Malcolm Burr, Bellagio, East Grinstead, Sussex, was elected a Member.

Mr. Barrett exhibited the only known Scottish specimen of *Colias Hyale*, captured in Dumbartonshire by Mr. Malloch; he also exhibited a var. of *Crymodes exulis* taken by Mr. Percy Bright in Unst, which form was at one time considered a distinct species, and termed *Hadena Maillardi*, together with the same species from Rannoch and Iceland. Mr. Auld, a varied series of *Cucullia chamomilla* from Lewis. Mr. R. Adkin, a series of *Hybernia marginaria* (*progemmaria*), the progeny of a pair received from Mr. Hewett, of York; about sixty per cent. of the males were of the black form and followed the parents, while the whole of the females were dark; he also made remarks upon the scaling and pigmentation. Mr. Mera, a larva of *Callimorpha Hera*, which had fed all the winter and was in its last stage. Mr. Step, the following specimens of Spider Crabs from Portscatho:—*Macropodia rostratus*, male and female, with a card of dissections to show sexual differences, curved hooked hairs, upper and under-sides of the chelæ, &c.; *Inachus dorynchus* and *I. leptochirus*; *Pisa tribulus*, with a red sponge covering the whole of the carapace; and photographs of *Maia squinado*. The Secretary then read a paper on the above exhibits, communicated by Mr. Step, entitled, "Some British Spider Crabs."

May 13th, 1897.—R. SOUTH, Esq., F.E.S., Vice-President, in the Chair.

Mr. Stanley Edwards exhibited a small scorpion which he had captured at Digne, in the South of France, together with a specimen of the Field Cricket from the same locality; he also exhibited a pupa of *Charaxes Jasius*, and stated that Dr. Chapman had sent him larvæ of this species from Cannes earlier in the year. Mr. Tutt made remarks upon the condition of vegetation and insect life as observed by Mr. Edwards and himself during a week's holiday at Easter in the S. E. of France. The weather there was superb, but yet the vegetation was, at 1900 feet above the

sea, but little in advance of that in the S. of England. With the development of insect life there was no comparison, for in one day he had seen no less than 52 species of *Lepidoptera*. In the corner of one field were to be seen all our three *Melitææ* flying together. Mr. Lucas exhibited a mature and two immature specimens of an Indian species of cockroach (*Leucophaea surinamensis*, = *indica*) taken in the forcing pits at Kew Gardens. Mr. Montgomery, young larvæ of *Apamea ophiogramma* in the stems of the ribbon grass, and contributed notes on its habit of leaving its old burrow and selecting a new stem. Mr. South, a series of *Amphidasy strataria* (*prodromaria*), and remarked on their small size, while the larvæ had been unusually large. Mr. Auld, a varied series of *Boarmia cinctaria* taken this year in the New Forest. Mr. H. Moore, specimens of the rare insect, *Pseudopontia paradoxa*, with drawings showing its anomalous venation, its bifid scales, and the isolated position of each scale on the wing membrane; he contributed notes on the species which he said had come from Mombasa, E. Africa, and about the position of which there was the widest divergence of opinion; some authorities placed it in the *Rhopalocera*, some in the Geometers, and some among the Bombyces. Mr. Turner, on behalf of Mr. Clarke, of Reading, specimens of *Tephrosia crepuscularia*, taken in the wood which Mrs. Bazett had said did not produce the species. Mr. Tutt read a paper sent by Prof. Grote, A.M., entitled, "Autumnal Notes from the Butterfly Camp by the shores of Lake Erie."—HENRY J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: May 5th, 1897.—MR. R. TRIMEN, F.R.S., President, in the Chair.

Mr. C. H. Peers, of Harrow Weald, was elected a Fellow of the Society.

Mr. J. J. Walker exhibited an earwig, *Apterygida arachidis*, Yersin, new to Britain, and recently found in large numbers in chemical works at Queenborough. It had been probably imported among bones. Mr. Burr also showed a complete series of the British species of *Forficulidæ*. Mr. Enock, eggs of *Stenopsocus cruciatus*, L., containing parasitic larvæ of *Alaptus pusillus*, Hal., the male of which would probably prove to be *Alaptus minimus*, Hal. Mr. Merrifield, the results of temperature experiments on the pupæ of *Pieris Daphnidice*, *Melitæa Didyma*, and other species; he thought that changes produced by abnormal temperatures might be classed as follows:—(1) enhancement, (2) diminution of intensity of colour without alteration in the form of the markings; (3) substitution of scales of a different colour, scattered or in groups; (4) imperfection. In the development of scales or their pigment. Mr. Tutt, a series of insects collected at Cannes in March, and remarkable for their early emergence. Dr. Dixey read a paper on "Mimetic Attraction," in which he dealt with the steps by which wing pattern, as in South American *Pierine*, could be modified in various directions so as to secure a mimetic result, and with the theories of mimicry put forward by Bates and Fritz Müller. Mr. Blandford exhibited and discussed series of homœochromatic and mimetic neotropical species of butterflies, chiefly of *Heliconiidae* and Heliconioid *Danaidae*. The discussion was continued by Prof. Poulton, who showed similar groups of several genera, remarkable as having been collected and sent to England as examples of single species, and by the President, and it was ultimately adjourned to June 2nd.

W. F. H. BLANDFORD and F. MERRIFIELD, *Hon. Secretaries*.

ADDITIONS, &c., TO SHARP AND FOWLER'S CATALOGUE
OF BRITISH *COLEOPTERA* (1893).

BY G. C. CHAMPION, F.Z.S.

A few species having been omitted from this Catalogue, it is here calling attention to them, and to give a list of the others recorded, with synonymical notes. The additional species are marked thus *, and those omitted from Sharp and Fowler's with a †.

- ocellatus*, Ill.....Reinstated. Ent. Mo. Mag., xxxi, p. 265. One specimen found at Pouladar, West Cork.
- ulus nemorivagus*, Duft. Ent. Mo. Mag. xxxii, p. 253. *A. atricornis* var. *atricornis*, Steph. (Steph.) is a variety of this species, and not of *A. binotatus*, F., as previously supposed. Typical form and variety both found at Woking.
- velica*, Zimm.....Ent. Mo. Mag., xxxii, p. 97. Chobham and Woking.
- iricolor*, Bedel.....Ent. Mo. Mag., xxix, p. 250.
- riparium*, Fowl.
- virens*, Gyll.Ent. Mo. Mag., xxxi, p. 263. Loch Maree.
- Lejolsi*, Muls. & Rey...Ent. Mo. Mag., xxxi, p. 181. Ilfracombe.
- succicola*, Thoms.Ent. Mo. Mag., xxxiii, p. 97. Generally distributed.
- esomelinus*, Marsh.....One specimen of the variety found at Bury St.
- var. *nigroceruleus*, Rey Edmunds, in a nest of *Bombus hortorum*.
Ent. Mo. Mag., xxxii, p. 50.
- parius*, Kelln.Ent. Mo. Mag., xxxii, p. 80. Porlock, Somerset.
- umbratilis*, Grav.Evidently omitted by accident.
- is alutaceus*, Thoms.Ent. Mo. Mag., xxxiii, p. 98. London district and Slapton, Devon.
- s planifrons*, Blatch.....Ent. Mo. Mag., xxvi, p. 93 (April, 1890). Sherwood Forest. This species is included in Heyden, Reitter, and Weise's Catalogue (1891). It is allied to *N. Sparshalli*, Denny.
- ina*, Reitt.Ent. Mo. Mag., xxxii, p. 4. Thorpe-le-Soken, Essex. One specimen.
- ryx angusta*, Matth.....Ann. and Mag. Nat. Hist. (6), iii, p. 192 (1889). Three specimens. Leicestershire. Mr. Matthews states that this species may be distinguished from others by its intermediate size, long and narrow form, very short elytra, and long abdomen.
- ecognitum*, Matth.....Ann. and Mag. Nat. Hist. (6), iii, p. 195 (1889). Wicken Fen. Mr. Matthews remarks that this large and very distinct species has.

sea, but little in advance of that in the S. of England. With the development of insect life there was no comparison, for in one day he had seen no less than 52 species of *Lepidoptera*. In the corner of one field were to be seen all our three *Melitææ* flying together. Mr. Lucas exhibited a mature and two immature specimens of an Indian species of cockroach (*Leucophaea surinamensis*, = *indica*) taken in the forcing pits at Kew Gardens. Mr. Montgomery, young larvæ of *Apamea ophiogramma* in the stems of the ribbon grass, and contributed notes on its habit of leaving its old burrow and selecting a new stem. Mr. South, a series of *Amphidasystrataria* (*prodromaria*), and remarked on their small size, while the larvæ had been unusually large. Mr. Auld, a varied series of *Boarmia cinctaria* taken this year in the New Forest. Mr. H. Moore, specimens of the rare insect, *Pseudopontia paradoxa*, with drawings showing its anomalous venation, its bifid scales, and the isolated position of each scale on the wing membrane; he contributed notes on the species which he said had come from Mombasa, E. Africa, and about the position of which there was the widest divergence of opinion; some authorities placed it in the *Rhopalocera*, some in the Geometers, and some among the Bombyces. Mr. Turner, on behalf of Mr. Clarke, of Reading, specimens of *Tephrosia crepuscularia*, taken in the wood which Mrs. Bazett had said did not produce the species. Mr. Tutt read a paper sent by Prof. Grote, A.M., entitled, "Autumnal Notes from the Butterfly Camp by the shores of Lake Erie."—HENRY J. TURNER, *Hon. Secretary*.

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LIST OF ADDITIONS, &c., TO SHARP AND FOWLER'S CATALOGUE
OF BRITISH COLEOPTERA (1893).

BY G. C. CHAMPION, F.Z.S.

Some few species having been omitted from this Catalogue, it is worth while calling attention to them, and to give a list of the others since recorded, with synonymical notes. The additional species or varieties are marked thus *, and those omitted from Sharp and Fowler's Catalogue with a †.

- Carabus cancellatus*, Ill.....Reinstated. Ent. Mo. Mag., xxxi, p. 265. One specimen found at Pouladar, West Cork.
- **Anisodactylus nemorivagus*, Duft. Ent. Mo. Mag. xxxii, p. 253. *A. atricornis* var. *atricornis*, Steph. (Steph.) is a variety of this species, and not of *A. binotatus*, F., as previously supposed. Typical form and variety both found at Woking.
- **Amara famelica*, Zimm.....Ent. Mo. Mag., xxxii, p. 97. Chobham and Woking.
- Bembidium iricolor*, Bedel.....Ent. Mo. Mag., xxix, p. 250.
riparium, Fowl.
- * „ *virens*, Gyll.Ent. Mo. Mag., xxxi, p. 263. Loch Maree.
- **Ochthebius Lejolsi*, Muls. & Rey ...Ent. Mo. Mag., xxxi, p. 181. Ilfracombe.
- **Aleochara succicola*, Thoms.Ent. Mo. Mag., xxxiii, p. 97. Generally distributed.
- Quedius mesomelinus*, MarshOne specimen of the variety found at Bury St. Edmunds, in a nest of *Bombus hortorum*.
*var. *nigrocæruleus*, Rey Ent. Mo. Mag., xxxii, p. 50.
- * „ *riparius*, Kelln.Ent. Mo. Mag., xxxii, p. 80. Porlock, Somerset.
- †*Philonthus umbratilis*, Grav.Evidently omitted by accident.
- **Platystethus alutaceus*, Thoms.Ent. Mo. Mag., xxxiii, p. 98. London district and Slapton, Devon.
- *†*Neuraphes planifrons*, BlatchEnt. Mo. Mag., xxvi, p. 93 (April, 1890). Sherwood Forest. This species is included in Heyden, Reitter, and Weise's Catalogue (1891). It is allied to *N. Sparshalli*, Denny.
- **Epuræa nana*, Reitt.Ent. Mo. Mag., xxxii, p. 4. Thorpe-le-Soken, Essex. One specimen.
- *†*Trichopteryx angusta*, Matth.....Ann. and Mag. Nat. Hist. (6), iii, p. 192 (1889). Three specimens. Leicestershire. Mr. Matthews states that this species may be distinguished from others by its intermediate size, long and narrow form, very short elytra, and long abdomen.
- *†*Ptilium incognitum*, Matth.....Ann. and Mag. Nat. Hist. (6), iii, p. 195 (1889). Wicken Fen. Mr. Matthews remarks that this large and very distinct species has,

owing to the parallel lines on its thorax, been confounded with *Pt. affine*, Er., but, with the exception of the thoracic lines, differs entirely from that species in size, form, colour, and sculpture.‡

Telephorus figuratus, Mann.Ent. Mo. Mag., xxix, p. 143. Ben Cruachan,
*var. *cruachanus*, Chitty Scotland.

Latheticus oryzae, C. O. Waterh.

striolatus, Fairm.....Rev. d'Ent., xi, p. 111 (*Lyphia*). Obock. Mr.
Waterhouse's name has twelve years' pri-
ority.

Palorus Ratzeburgi, Wissm.Ent. Mo. Mag., xxxii, p. 27.

melinus, Sharp & Fowl. Cat.

ambiguus, Woll.

floricola, Mars.

* „ *subdepressus*, Woll.Ent. Mo. Mag., xxxii, p. 27. London granaries.
 bifoveolatus, Baudi, Seidl.

Alphitophagus bipustulatus, Say ...Ent. Mo. Mag., xxxi, p. 283. Say's name has
 quadripustulatus, Steph. nine years' priority.

Anaspis ruficollis, F.

 *var. *alpicola*, Emery ...Ent. Mo. Mag., xxxi, p. 207. Putney.

Lema septentrionis, WeiseEnt. Mo. Mag., xxxiii, p. 135.

Erichsoni, Sharp & Fowl. Cat.

Zeugophora flavicollis, Marsh.The name *australis*, Weise, must fall as a
 australis, Weise. synonym. Ent. Mo. Mag., xxxiii, p. 61.

Cryptocephalus parvulus, Müll.....The variety recorded from Hastings. Ent.
 †var. *barbareæ*, Steph. Mo. Mag., xxxiii, p. 90.

„ *bipunctatus*, L.The variety recorded from Woking. Ent. Mo.
 *†var. *Thomsoni*, Weise. Mag., xxviii, p. 193 (July, 1892).

Confounded with *C. bipustulatus*, F., in
collections.

**Otiorrhynchus auropunctatus*, Gyll...Ent. Mo. Mag., xxxi, p. 133. Found in num-
bers on the coast of Ireland, in the counties
of Dublin, Meath, and Louth.

**Esomias pyrenæus*, Seidl.Ent. Mo. Mag., xxxiii, p. 134. Found in
numbers in the Plymouth district.

Strophosomus capitatus, De Geer ...*S. fulvicornis* is a variety of *S. capitatus*. Ent.
 var. *fulvicornis*, Walt. Mo. Mag., xxxiii, p. 60.

Liosoma pyrenæum, Bris.At my request, M. Bedel has recently compared
 var. *troglydytes*, Rye. a specimen of *L. troglydytes*, Rye, with the
type of *L. pyrenæum*, Bris. It appears only
to differ in having the thorax more regu-
larly punctured, the upper surface less
shining (the thorax appearing duller), and
the general shape perhaps less oblong. The

‡ Misplaced under the genus *Ptenidium* in the Zoological Record for 1889 (Ins., p. 105).

small size is of no importance, as *L. pyrenæum* varies greatly in this respect. In M. Bedel's opinion the insect cannot be regarded as more than a variety or subspecies of *L. pyrenæum*. Both forms occur in France: *L. pyrenæum* in the Pyrenees, Gascony, and on the Central Plateau; and *L. troglodytes* in Normandy (Forest of Cérisy, Calvados). The latter name is sunk as a synonym in Heyden, Reitter, and Weise's Catalogue (1891).

**Cionus longicollis*, Bris. Ent. Mo. Mag., xxx, p. 100. Portsdown, Hants.

Ceuthorrhynchidius mixtus,

Muls. & Rey... *C. nigroterminatus*, Woll. (= *Crotchii*, Bris.),
not synonymous with *C. mixtus*, Muls. and
Rey. Ent. Mo. Mag., xxxii, p. 30.

Horsell, Woking :

June 9th, 1897.

HERMAPHRODITE EARWIG (*CHELISOCHES MORIO*, FABR.).

BY MALCOLM BURR, F.Z.S.

While looking through a number of earwigs which I have recently received from Borneo, Java and Celebes, my attention was struck by the curious shape of the forceps of two *Chelisoches morio*, Fab. They are distinctly hermaphrodite, the right branch being male in form and the left female. The number of visible segments is nine, as is the case in male earwigs, whereas the female has only seven visible.

Brunner remarks (Prod. Eur. Orth., p. 4) that hermaphrodite forms are not uncommon in earwigs, and de Bormans records the phenomenon in the fine species *Labidura* (?) *pugnax*, Kirb., from Burmah (Ann. Mus. Civ. Gen., 2nd Ser., vol. xiv [1894], p. 377), in which case also it was the right branch that had the male form. I am not aware whether asymmetry occurs also in the internal sexual organs.

Of the specimens referred to, one is from Bua-Kraeng in Celebes, and the other from Pengalengan in Java.

Chelisoches morio is a very variable and a widely distributed species, being found in all the Islands of the Pacific and Indian Oceans, and in Japan, Burmah, New Zealand, Mauritius, east coast of Africa, and recently a pair has been taken in one of the artificially heated houses at Kew Gardens.

Bellagio, East Grinstead :

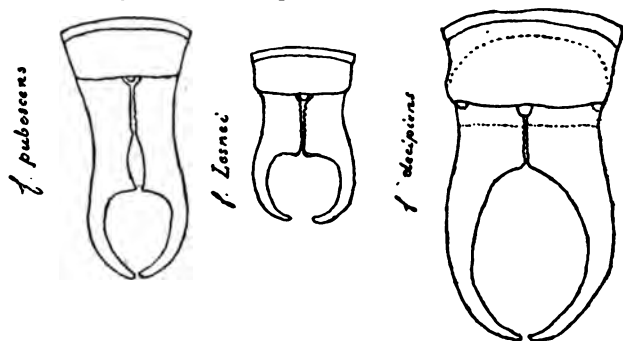
May 23rd, 1897.

FORFICULA LESNEI, FINOT, A BRITISH INSECT.

BY MALCOLM BURE, F.Z.S.

In the Ent. Mo. Mag., 2nd series, vol. vii, p. 230 (1896), *Forficula pubescens*, Gén  , is recorded as having been taken at the Warren, Folkestone; the same specimen is figured as *pubescens* in British *Orthoptera*, pl. 1, fig. 6 (Naturalist's Journal, Suppl., March, 1897). M. de Bormans, after attentively examining the figure, has called my attention to another recently described species, *F. Lesnei*, Finot, which is very closely allied, and suggested that the earwig in question is really to be referred to the latter. I have again examined the insect, and compared it with the description of Finot, and his figures of this, *pubescens*, G  n  , and *decipiens*, G  n  , and think that it is a true *Lesnei*. But there is no reason that *pubescens* should be yet struck off the list of our British species, as it is possible that the earlier records of its capture refer to true *pubescens*; and Mr. Eland Shaw's words in his Synopsis (Ent. Mo. Mag., vol. xxv, p. 358, 1889), that the legs of the forceps are "almost contiguous for their whole length," seem to point to *pubescens*.

Lesnei chiefly differs from *pubescens* in the shape of the forceps,



and the distinction between these two species and *decipiens* may be seen by the accompanying figures, which M. de Bormans has been kind enough to send me.

F. pubescens is peculiar to the South of Europe, and is not a species that is likely to be imported in shipping. *F. Lesnei* has been found in grass and rough herbage in September at Trouville, Calvados and Villers-sur-Mer by M. Lesne, and at St. Germain, near Paris (de Bormans *in litt.*).

In *pubescens* the dilated part of the male forceps is considerably longer than in *Lesnei*, and in *Lesnei* than in *decipiens*, and at the apex

of the dilated part in *pubescens* and *Lesnei* there is a small blunt tooth, which is wanting in *decipiens*; the branches of the forceps meet at the apex in *pubescens* and *decipiens*, but do not do so in *Lesnei*, which is also of a darker and more uniform colour than the two other species; the wings are abbreviated; the antennæ have 12 joints.

Long. corp., ♂, 6—10 mm., ♀, 8—9 mm.

Long. forcip., ♂, 2—4 mm., ♀, 1.5—2 mm.

Forficula Lesnei, Finot, Bull. Soc. Ent. Fr. (vii), clxxxix, 1887; *id.*, Faune de la France, Insectes Orthoptères, p. 68, fig. 2 in text, 1890.

Forficula pubescens, Burr, Ent. Mo. Mag., 2nd series, vol. vii, p. 230, 1896; Brit. Orth., p. 16, pl. 1, fig. 6, 1897.

Bellagio, East Grinstead:

June 5th, 1897.

RARE HYMENOPTERA AND DIPTERA IN CORNWALL.

BY THE REV. T. A. MARSHALL, M.A., F.E.S.

On page 140 of this vol. Mr. Saunders mentions localities for some of the scarcer Aculeata. May I be permitted to add that *Methoca* occurs not uncommonly in this district? The precise spot is on the sandy banks of the river Lynher, north of Nottar Bridge, where I have seen six or seven at various times, and made some captures. The ground was formerly poisoned by the vernal overflow of the stream, impregnated with metallic matter from the mines in the hills, but is now nearly recovered, owing to the stoppage of mining. *Myrmosa melanocephala* is quite common at the same spot, and may be taken *ad libitum* late in the summer. But I have met with no ♂ of either species.

The following are either new to the British fauna, or for other reasons interesting; they are the more remarkable from the general entomological poverty of the district; it is worth while to seize the opportunity of placing them on record.

I have been gratified by the re-discovery here of Haliday's long lost genus *Neoneurus* (Ent. Mag., vol. v, p. 213); I have taken both sexes by sweeping flowers in the fields. The wings only of the insect were known, as drawn by Haliday, and copied by Van Vollenhoven. They differ widely from those of any other Braconid. I have named the species *N. Halidaii*, and placed it provisionally as an aberrant form of the *Areolarii*, next after *Orgilus*, with description and figure, in André's "Species."

Another Braconid new to England is *Acampsis alternipes*, Wesm., lately found by Mr. Bignell in some numbers in the Bickleigh Woods near Plymouth. It is singular that this conspicuous insect should so long have escaped our researches. Its systematic place is next after *Sphæropyx* (*Rhytidogaster* in the catalogue).

Another parasite unknown as British hitherto, is the Tryphonid *Polyblastus annulicornis*, Giraud (Ann. Soc. Fr., 1871, p. 406). Only one was captured by Giraud near Vienna, and regarded by him as a great rarity. I find it here occasionally in hedges; it varies much in size; no ♂ has yet occurred.

In the neglected Orders of insects it is easy to increase the British list, but I forbear to mention other species, as their number would prove excessive. However, I cannot omit the fact that the scarce Dipteron, *Merodon equestris*, is now flying in some numbers in my garden, but it is so wary as to be almost unapproachable; two captures in a day is the utmost success to be expected. In the same garden *Criorrhina berberina* is an occasional visitant.

Botusfleming, Cornwall:

June 5th, 1897.

DEFOLIATION OF CORK TREES IN TUNIS BY *OCNERIA DISPAR*.

BY THE REV. A. E. EATON, M.A., F.E.S.

Any one visiting Aïn Drahan in the Khroumirie (Tunisie), from La Calle or Tabarka, last July, could see, while passing along the slopes of Djebel Bonouela and Kef el Kebai, that something had happened to the forest thereabouts. The cork trees from about 1900 to 2200 feet above the sea, for a couple of miles or more, looked very much like alders in flower beginning to show leaf. They had been stripped of their leaves by a larva, and their summer shoots caused the reddish-brown *residua* to be sparsely picked out with green; but the whole season's growth of cork must have been abortive. It was only *Quercus suber*, L., that was ravaged; *Q. Mirbeckii*, Dur., was untouched. The moth was out in profusion on July 21st—males fluttering about the trees in the sunshine, as numerous as leaves falling in an October breeze; females, a dispersed host, coupling and laying eggs amidst remnants of deserted webs and empty pupa shells. A dangled loosely from the trunks and branches.

re and there females stood close together in a row on the part
on which cork had been harvested (about ten moths to a

length of sixteen inches), and the row could be seen fifty yards away ; but on the rough bark they were less conspicuous, and they harmonized well in colour with the lighter surfaces of chinks and seams, without exactly matching the tint. Among the crowd were a few triplets *in cop.* ; there were also some cripples ; but the moths seemed to be tolerably constant in pattern of markings. Some straggling larvæ were still afoot, varying in grade, and badly off for food. If all the eggs hatch out in one season, starvation it would seem awaits the brood. Several big black carnivorous beetle larvæ were climbing up from the ground to feed apparently upon the larvæ, but they usually let themselves drop down on being approached, and were not observed seizing anything. *Ichneumonidæ* were numerous.

[This account of the larvæ of *O. dispar* by Mr. Eaton is very interesting. Lucas, in his "Exploration scientifique d'Algérie," records the insect (see page 377) from the woods round Lake Tonga in the district of La Calle in the years 1840-42 ; but I can trace no further record of it in North Africa till the year 1881, when Oberthür mentions that Dr. Codet saw the larvæ in the neighbourhood of Sebdou (Etudes d'Entomologie, p. 76). The Rev. A. E. Eaton has found it in its old locality, so we may conclude it has remained there since Lucas's time, but it is curious that it has not (apparently) extended much into Algeria, for M. Oberthür would be sure to have had plenty of so large a species sent him had it been common there.—G. T. BETHUNE-BAKER].

REMARKS UPON METHODS OF KILLING DIPTERA.

BY R. H. MEADE.

In February last Mr. Saunders commenced in this Magazine some interesting "Hints on Collecting Aculeate *Hymenoptera*," in which he gives directions for preparing a cyanide bottle for the killing of his captures. Until lately I have been in the habit of treating *Diptera* in the same manner as he suggests, viz., killing them with the fumes of cyanide, but I have never been quite satisfied with the plan. This salt (cyanide of potassium) is very deliquescent, and it is almost impossible to keep the inside of the bottle dry, even when it is partly filled with scraps of blotting paper. I always found that if any number of flies remained together in the bottle, even for a short time, some of them would become damp and discoloured, and if a few only were left for many hours, or until the next day, they often became

blackened and spoilt. Bright or yellow-coloured species, such as *Syrphidæ*, are especially liable to change. Under these circumstances I thought that I would look out for some other salt which would give off poisonous fumes without being deliquescent, and it struck me that perhaps benzoline (the smell of which is destructive to mites), might answer the purpose if the fumes were sufficiently concentrated. Upon making a trial I find that it answers admirably; some of the salt crushed or in small crystals must be placed at the bottom of a phial or small wide mouthed bottle, then covered with a little cotton wool and wedged down and fixed with some paper. The quantity of benzoline must not be very small, for the fumes are scarcely so deadly as those of cyanide, and require to be strong. I find that a bottle so prepared will kill flies in a few minutes, and the specimens take no harm if they remain in the bottle until the next day unless there are a large number of them together.

There seems to be no deliquescence of the benzoline, as the salt remains hard and dry, and the insides of the bottle do not get damp, though closely corked up; the evaporation also goes on very slowly, so that the bottles will last a very long time without replenishing. I do not think that Mr. Saunders' plan of having a tube through the cork would answer in the use of benzoline, as it is necessary to keep the bottle tightly corked.

Bradford: June 11th, 1897.

ODONATA COLLECTED BY THE REV. A. E. EATON IN ALGERIA:
WITH ANNOTATIONS.

BY ROBERT McLACHLAN, F.R.S., &c.

Since the end of 1892 my friend Mr. Eaton has passed the greater part of his time in Algeria, and has made extensive collections, which he has most liberally handed over to specialists. The *Neuroptera* have come to me, and I herewith give details of what he has found among the *Odonata*. He did not visit the Province of Oran, and paid very little attention to Dragon-flies while in the Province of Algiers, so that the greater part come from the eastern Province of Constantine. He secured 31 species (or about two-thirds of those recorded from the country), amongst which three, viz., *Onychogomphus Genei* (in two races, very interesting), *Æschna rufescens* and *Enallagma cyathigerum*, are additions to the Fauna. I am also able to describe the hitherto unknown ♀ of *Onychogomphus Costæ*.

In the course of working out the materials certain observations, critical and otherwise, have occurred to me, and have been incorporated.

Sub-fam. LIBELLULINÆ.

SYMPETRUM FONSCOLOMBII, Selys.—Médéa, July 5th, 1893, and Biskra, May 26th, 1894.

SYMPETRUM STRIOLATUM, Charp.—A few examples from Constantine in June and October, 1894, and October, 1895.

SYMPETRUM MERIDIONALE, Selys.—A few examples, Bône, June 4th, 1896; Lac des Oiseaux, June 18th and 25th, 1896.

SYMPETRUM SANGUINEUM, Müll.—Ain Kriar, June 22nd, 1896.

TRITHEMIS RUBRINEEVIS, Selys.—Lac Tonga, June 24th and July 13th and 16th, 1896; Lac Houbeira, June 11th, 1896. I have never seen European (typical) examples of this species. De Selys remarks that Algerian examples are larger than those from West Africa. I am quite of the same opinion, and they also seem more robust, with a larger pterostigma, &c. I find no apparent differences in the genitalia of the second segment.

CROCOTHEMIS ERYTHRÆA, Brullé.—A few individuals, varying much in size and intensity of colour, from Biskra, Bône, La Calle and Lac Tonga at varying dates. One example from Biskra is ticketed "January 9th, 1895," but I suspect an error on my part.

CACERGATES LEUCOSTICTA, Burm.—About a dozen examples from Lac Tonga, Lac Houbeira and Lac des Oiseaux in June and July, 1896. Mr. Eaton remarks that the species is gregarious in habit. The females have the wings entirely hyaline.

N.B.—De Selys (Ann. Soc. Ent. Belg., xxxi, p. 23), possibly copying from Brauer (Verhandl. z.-b. Gesell. Wien, xviii, p. 736), used the specific name "*unifasciata*, Oliv.," for this insect. There is no such name in the Encyc. Méthod., and I know not where else to look for it. Rambur's *unifasciata* is the same species, but his name was original.

ORTHETRUM TRINACRIA, Selys.—Lac Tonga, Lac Houbeira and La Calle in July, 1896, seven examples.

N.B.—This species was placed in *Leptthemis* by Brauer; latterly it has been located in *Orthetrum*, which is nearer its proper position. But it (and others) will probably be found hereafter in a new genus, differing from *Orthetrum* typically in having the sectors of the triangle in the posterior wings distant at their origin.

Calvert (Proc. U. S. Nat. Mus., xviii, p. 127) calls attention to the fact that Karsch (Ent. Nachr., xvii, p. 59) differentiates *Orthetrum* by (*inter alia*) its having the above-mentioned sectors separated at their origin, but in error, for in typical *Orthetrum* (Newman) such a condition only occurs accidentally. In examining a very large number of specimens of European species, I find this condition to exist in only about one per cent.

In *Lib. Sabina*, Drury, which used also to be placed in *Leptthemis*, but now in *Orthetrum*, in all examples from Asia (therefore typical) and Polynesia these sectors

are widely separated at their origin, and in the genitalia of the second segment there is a pencil of stiff hairs on either side of the anterior lobe, as described by Hagen (Revue Odon., p. 289) in *ampullacea*, Schnd. (a synonym of *Sabina*). But in the African examples to which Selys (Ann. Soc. Ent. Belg., xxxi, p. 22) gave the varietal name of "*africana*," the sectors under consideration arise practically from the same point, and there is no pencil of hairs on the genitalia of the second segment, thus proving that the two forms are not only distinct as species, but will probably eventually be placed in different genera.

ORTHETRUM CHRYSOSTIGMA, Burm. (*barbara*, Selys).—Biskra, May 20th, 1894; Ain Kriar, June 20th, 1896; Lac des Oiseaux, June 25th, 1896; La Calle, July 15th, 1896; five examples in all, varying in size.

ORTHETRUM RAMBURII, Selys.—Nearly twenty-five examples, varying very much, from Biskra, various dates in May, 1894, and Ain Kriar, June 20th, 1896. These are a puzzling lot, but I think I have correctly identified the greater part of the males by the genitalia of the second segment; one or two proved uncertain (owing perhaps to individual conditions at the time they were captured). One very immature female, presumably belonging here, has the costal portion of the wings strongly tinged with yellow (it may be *cærulescens*, F.). *O. Ramburii* is the nearest ally of *O. cærulescens*; the latter is reported from Algeria, but I have seen no specimens from that quarter that I can refer to it with certainty.

ORTHETRUM CANCELLATUM, L.—La Calle, June 16th, 1896; Lac Houbeira, first half of July, seven examples.

ORTHETRUM NITIDINERVE, Selys.—Biskra, May 18th, 1894; Constantine, first half of June, 1894; Ain Kriar, second half of June, 1896; seven examples. In immature females the body is ochreous and almost entirely without markings.

Sub-fam. GOMPHINÆ.

ONYCHOGOMPHUS FORCIPATUS, L.—Two ♂ from Constantine, June 12th, 1894, and June 6th, 1895. These may be regarded as of the "race méridionale," but the amount of dark coloration on the abdomen, &c., is greater than in most examples from the south of Europe.

ONYCHOGOMPHUS COSTÆ, Selys (*Genei* ♂, Selys, *olim*).—I have before me six ♂ and two ♀ from Biskra in May and June, and Constantine in June. The general ground colour is pale ochreous, and the brown markings on the thorax are sometimes scarcely visible; in very adult individuals the thorax becomes whitish pulverulent. The legs remain wholly pale, excepting a short brownish or blackish line on the femora externally near the apex.

In the ♂ there are 10-13 antenodals and 6-7 postnodals in the anterior wings. The size varies as follows:—posterior wing 24-27 mm., abdomen (*cum append.*) 30-34 mm.; the examples from Constantine are larger than those from Biskra.

♀ (not hitherto described). Generally as in the ♂ (the bands of the thorax wholly wanting in one individual). Occiput hardly differing from that of the ♂. The blackish articulations of the segments of the abdomen, and false sutures, less marked than in the ♂. Margins of the 8th segment only slightly dilated laterally. Appendages longer than the 10th segment, yellow, straight, lanceolate, very acute; between them is a shorter, conical, yellow process. Vulvar scale yellow, small and short, deeply notched in the middle, the sides forming short cones. 9-11 antenodals and 7-9 postnodals in anterior wings. Length of posterior wing, 27 mm.; abdomen, 33 mm. (both examples are from Constantine).

ONYCHOGOMPHUS GENEI, Selys.—Three ♂ and two ♀ from Biskra in April, May and June, and ♂ and ♀ from Lac Houbeira. At first I was disposed to consider the examples from the separate localities represented two distinct species, those from Biskra having the abdomen less darkly marked, *and there is no dark band on the top of the front before the ocelli*; to these I was inclined to apply the name *Genei* (as represented by the original type from Sicily), and this opinion was strengthened by the fact that one ♀ has the small black teeth on either side of the edge of the occiput as mentioned for the type (Mon. Gomph., p. 52), but these teeth are absent in the other ♀ from the same locality, which otherwise is similar. The examples from Lac Houbeira I inclined to consider *O. Hagenii*, Selys (with *excelsus*, Costa, as a synonym). In these the abdomen is somewhat heavily marked with black, *there is a broad blackish band at the top of the front before the ocelli* (no trace of teeth on the edge of the occiput in the ♀), and the characters generally are as in Costa's types of *O. excelsus* (from the island of Sardinia), from which *O. Hagenii* (type from Abyssinia) seems to differ only in the abdomen being still more blackish at the extremity. Also it is possible that the inferior appendage (seen from beneath) is rather more dilated at its extremity in these latter examples.

In all the foregoing the superior appendages are truncate and slightly excised* at the tips if viewed from beneath.

N.B.—The Upper Egyptian and Nubian *O. pumilio*, Rb., is distinct; apart from its small size and pale colour, the tips of the superior appendages are entire or acute, the inferior appendage slightly different, and there is a marked difference in the form of the anterior lobe in the genitalia of the second segment.

I think it will eventually be proved that *Genei*, *excelsus* and *Hagenii* are local races of one species; that *excelsus* is more allied to *Hagenii* than to *Genei*; and that both *Genei* and *excelsus* (as races) occur in Algeria.

* Not split as is represented in Hagen's figure (Mon. Gomph., pl. 3, fig. 4e).

GOMPHUS LUCASII, Selys.—Constantine, end of May and first half of June, two ♂, three ♀.

Sub-fam. ÆSCHNINÆ.

ANAX FORMOSUS, v. d. L.—Médéa, pond W. of Oued Gargua, about 2000 feet, July 5th, 1893; Biskra, April 14th, 1894; Lac Houbeira, July 3rd, 1896.

ÆSCHNA CYANEA, Müll., variety (or aberration?).—Azazga, September 13th, 1893, one ♂.

This example is in several respects aberrant. On the face the nasus is wholly *fuliginous*, except at the sides; the black T-spot on the top of the front has its head extremely broad: the principal triangles are symmetrically *four-celled* in the anterior wings and *three-celled* in the posterior, in each case the horizontal nervule dividing the first cellule being absent: the *anal triangle* in the posterior wings is symmetrically only *two-celled*, owing to the absence of the perpendicular nervule dividing the upper half. The spots on the thorax above are reduced in size. But in the markings of the abdomen, and in anal structure, it is absolutely typical.

ÆSCHNA AFFINIS, v. d. L.—Ain Kriar and La Calle in June, common.

ÆSCHNA RUFESCENS, v. d. L.—Ain Kriar, June 20th, 1896, common.

Sub-fam. CALOPTERYGINÆ.

CALOPTERYX HÆMORRHOIDALIS, v. d. L.—A few examples, Biskra, May, 1894; Constantine, May, 1895; Le Tarf and Lac Houbeira, July, 1896.

CALOPTERYX EXUL, Selys.—About a dozen examples of this singular form (the wings being hyaline in both sexes) from the same locality near Constantine in which it was originally found by Lucas more than fifty years ago.

Sub-fam. AGRIONINÆ.

PLATYCNEMIS SUBDILATATA, Selys.—Constantine, June 12th, 1894; Biskra, May 20th, 1894; Oued Bou Sba, June 2nd, 1896; Le Tarf, June 16th, 1896; Mines of Kef Oum Teboul, July 16th, 1896; Lac Houbeira, July 11th, 1896. I have before me 12 ♂ and 4 ♀.

N.B.—The specimens indicated above vary very much. As in *pennipes*, Pall., there are two main varieties, and evidently quite independent of locality or season. But there is no *blue* variety of *subdilatata*; the ground colour of this is whitish, differing in the presence or absence of dark bands on the abdomen; intermediate conditions exist. Most, not all, of the females have no dark abdominal bands except at the apex. I think it would be very difficult to separate the pale form of the ♂ of *pennipes* from that of *subdilatata* if unaccompanied by the ♀, and with no stated locality, for I fail to realize the given character that the superior appendages in *subdilatata* are more deeply bifid.

ISCHNURA GRAELLSII, Rbr. (*maroccana*, Kolbe).—Apparently generally distributed in May, June and July. About 25 examples.

N.B.—After a comparison of specimens from Portugal, Morocco and Algeria, I have arrived at the conclusion that *A. maroccana*, Kolbe, is not distinct. I alluded to this subject in 1889 (*cf.* Ent. Mo. Mag., xxv, p. 349) when writing on some *Odonata* from Morocco, and I then called attention to a valuable observation by Kolbe on the structure of the dorsum of the 2nd abdominal segment. I find it occurs in both sexes, and to a smaller extent also in *I. Gensi*, but not in *elegans* or *senegalensis*.

ENALLAGMA CYATHIGERUM, Charp. — Constantine, May 28th, 1895, one ♂.

AGRION LINDENII, Selys.—Le Tarf, Lac des Oiseaux, Oued Bou Sba, and other places in the district, in June and July, seven ♂.

PYRRHOSOMA TENELLUM, Vill.—Ain Kriar and Mines of Kef Oum Teboul in June and July. The only ♀ is of the var. in which segments 1, 2, 3 (except at apex), 8, 9 and 10 of the abdomen are red, and all the others black, above.

LESTES VIRIDIS, v. d. L.—Constantine, October 14th and November 6th, 1894, two ♂.

LESTES VIRENS, Charp.—Médéa, July 5th, 1893; Constantine, October 11th, 1894; Bône, June, 1896; Lac des Oiseaux, June 15th, 1896; Le Tarf, June 17th, 1896; apparently common.

The only example from Constantine is a ♂ in which the green of the body is replaced by bronzy-black (almost as in *Sympycna*), with a cupreous tinge on the broad infra-humeral area; otherwise normal.

LESTES BARBABA, F.—Médéa, July 5th, 1893; Constantine, May 25th, 1895; Lac des Oiseaux, June 15th, 1896; Le Tarf, June 17th, 1896.

SYMPYCNA FUSCA, v. d. L.—Bône, Constantine and Biskra, in January, February, June and October. Common.

Lewisham, London: April, 1897.

P.S.—An excursion to Ain Drahan in Tunisie on July 21st, 1896, produced the following, viz., *Orthetrum Ramburii*, *O. nitidinerve*, *Calopteryx hæmorrhoidalis*, *Agrion Lindenii* and *Lestes virens*, one example of each.

Chrysopa flava, Scop., in South Australia.—In a small collection of *Neuroptera* from Adelaide, sent to me for determination, I find an undoubted ♂ of this common British species, which seems to have established itself there, and will no doubt prove beneficial. Probably it was introduced (in the pupa stage?) with plants from England or some other part of Europe. But Australia has many native species of *Chrysopidæ*, whereas they are unaccountably absent in New Zealand.—R. McLACHLAN, Lewisham, London: May 1st, 1897.

Early appearance of Formica rufa.—Does Mr. Bignell intend to convey that April 22nd is an early date for the emergence of the winged females of this species (*vide ante* p. 141)? If so, he is undoubtedly correct; but if, on the other hand (as the heading would show), he considers it early for the whole species, he is at least a month too late. I have watched a very strong colony of this most interesting species for the last five years, and can testify that the date of emergence of the ♀s (as much farther north as is Ipswich) is never later than the end of March: they were fetching and carrying in full force on March 23rd, 1895. The winged ♂s and ♀s are generally to be met with from the middle to the end of May, but are rarely seen during the heat of the day, unless the nest be disturbed. Perhaps Mr. Saunders can tell us why this species periodically deserts its nests in the late autumn and is found to possess a brand new one, with all parts complete, some twenty yards or so distant the next spring? Possibly because they want more "elbow room."—CLAUDE MORLEY, Everton House, Ipswich: June, 1897.

[Forel, in his "Fourmis Suisses," mentions that *Formica rufa* occasionally moves away from its old nest and constructs another, but he does not mention any periodical movement of this sort. It would be very interesting to know whether these movements are yearly, and if so, for how many years they have been observed. I think Mr. Bignell in his note probably only alluded to the time of appearance of the female; the workers, as Mr. Morley rightly remarks, are much earlier in appearing.—E. S.]

An assemblage of parasitic Hymenoptera in Devonshire.—On May 5th I was wandering through an oak coppice, Bickleigh Woods; the buds on the oaks were bursting and the rudimentary leaves protruding, but not enough to give shelter to any flies. I, however, came to a small beech, about six feet high in full leaf, the number of leaves I should say did not exceed eighty; to my astonishment it was literally covered with ichneumons; I boxed about eighty, some of the captures are certainly worth recording. I visited the spot three days after, and still the little tree attracted some dozens under the shelter of its leaves, the only leaf shelter to be obtained for a considerable distance from the cold winds and heavy rainy clouds which threatened to deluge the earth at any moment.

Eumesius albitarsus, Curt.—I believe this apparently rare species has not been taken in England since Curtis's time; he says, "This remarkable genus is so exceedingly rare that only three specimens of the first species (*crassicornis*, Grav.) have been discovered, and but one each of the others (*serriicornis*, Hal., and *albitarsus*, Curt.), and the females are unknown," plate 660, 1837. J. Giraud, however, appears to have taken two specimens (male and female) in Austria, 1857, and described both.

On May 5th I obtained three males, on the 8th four males and four females, and on the 11th six of each sex, making a total of twenty-three. A change in the weather took place, the bright sunny days following expanded the oak leaves and plenty of shelter was soon at hand.

For the benefit of those interested I will mention the difference between the sexes, which is very little:—the antennæ in the female are compressed as in the male, but only slightly dilated; the yellow markings on head and thorax and the

white hind tarsi of the male are wanting in the female, all these are black ; the base of the abdomen, as in the male, is black ; the other segments a brighter colour, and may be called red ; the red at the apex of the first segment is rather broader, and there are four black dots on the second and two on the third and fourth ; ovipositor concealed.

When I obtained these I also got several larvæ of *Asteroscopus sphinx* (= *Petasia cassinea*), each with seven to nine white eggs on the surface of the skin ; I had an idea that these might produce *E. albitarsus*, but, unfortunately, they shed their skins about four days after, removing the eggs in the operation.

Phytodietus vetulus, Gr., was the most abundant in the above assemblage, for I boxed forty-three males and twenty-three females ; my first acquaintance with this species.

Ichneumon fabricator, Fab.—This species came next in the order of numbers ; these, however, were all males.

Acampsis alternipes, Nees.—This is a new genus and species to the British list of *Braconida*. I secured them in the same locality as mentioned above, on May 8th and 11th ; ten males and five females (*vide ante*, p. 150).

Perilampus violaceus, Dalm.—This beautiful Chalcid, I obtained on May 11th, three specimens ; Colonel Yerbury kindly sent me one he captured in the New Forest on June 13th, 1894. This species looks quite out of place in our variable climate, having quite the appearance of an exotic production.—G. C. BIGNELL, Stonehouse, Plymouth : June 8th, 1897.

Saturnia pavonia feeding on *Rhamnus frangula*.—I found a colony of this larva, about to moult for the third time, on *Rhamnus frangula* near Virtuous Lady Mine on the 8th inst.—Id.

Taniocampa miniosa on bramble and blackthorn.—A larva of this species was discovered by Mr. F. C. Lemann spun up for the third moult in a terminal shoot of bramble, no oak occurring for some distance. The same afternoon I beat one out of bramble.—Id.

The Cimex in the nests of domestic fowls.—Many years ago the late Dr. Power told me that a correspondent had informed him that he once saw a number of *Cimices* in the nests of his hens, but no specimens were sent ; so the matter passed, and, as far as I know, the subject has never since been noticed. Flor, in his "Rhynchoten Livlands" (i, 673, 1860), under *Acanthia lectularia*, after saying that this "lästige Wanze ist ein treuer Begleiter des Menschen wo dieser seinen Wohnsitz aufgeschlagen hat," observes (p. 674), "Sie hält sich, wie man versichert, auch in Tauben-und-Hühnerställen (pigeon and henhouses) auf." This shows that the species, now well known to be distinct, *C. columbarius*, was not differentiated. And as there is still no certainty what the species in fowls' nests really is, I venture to ask any who may possess or have access to fowl-houses to investigate the matter, secure any examples of *Cimex* they may find, and send them (dead) to an expert for scientific examination.—J. W. DOUGLAS, 153, Lewisham Road, S.E. : June 13th, 1897.

Muscular energy in a Tipula's leg after death.—A curious case of muscular energy came under my notice last year, of which I made a careful note, but until I found it again a few days ago I had forgotten to record it. A daddy longlegs flying round the lamp in my brother's room one evening, dropped one of its legs. This fell on a piece of paper, and my brother noticed that it continued to move; so he watched it, and for more than an hour (in fact, till he left it and went off to bed) it kept up a rythmical contraction of the tarsal joints towards the tibiæ, 85 times a minute. I do not know if similar cases have been recorded, but I thought it was worth notice. The leg was entire, having been broken off at the coxa.—EDWARD SAUNDERS, St. Ann's, Woking: June 12th, 1897.

[An experience of my own may be relegated to the same class of reflex phenomena. Having struck at a large *Æschna* at rest on a twig, the head was seen to tumble down, whereas the rest of the insect flew away in an undecided manner for a considerable distance. Upon picking up the head I noticed that the insect had been eating a fly at the time. The mandibles continued working as if nothing had happened, and the masticated portions of the fly passed out at the back of the head.—R. McLACHLAN].

Medon ripicola and Scopæus sulcicollis at Plymouth.—Mr. A. Ford having been good enough to send me an example of the first-named insect, I at once suspected that I had a full series of the beetle, taken some years ago, doing duty in my collection as *Lithocharis ochracea*. On forwarding a few of them to Mr. G. C. Champion he kindly confirmed my suspicion. I have recently taken some thirty specimens of it, and in the same locality a single example of *Scopæus sulcicollis*, also named by Mr. Champion.—J. H. KEYS, 1, Sea View Avenue, Lipson, Plymouth: June 1st, 1897.

Hydroporus marginatus, Dufts., in Hampshire.—I had a day or two's collecting at Chilbolton, near Stockbridge, in Hampshire, at Easter, and was fortunate enough to find a fresh locality for this species. It occurred plentifully in very small rain water ponds which were quite dried up at the end of May, while at Ramsbury I have always found it in running water. I have some specimens to spare for any friends who may wish to have the species, if they will write to me for it.—R. W. LLOYD, St. Cuthbert's, Thurleigh Road, Balham, S.W.: June 17th, 1897.

Harpalus cupreus at Sandown, I. W.—After an interval of eight years I have had an opportunity of going to Sandown to see if I could again find *Harpalus cupreus*, Steph., and *Cathormiocerus socius*, Boh. I was fortunate enough to obtain a few specimens of each species at the old localities, but it was exceedingly hard work, as they both seemed much rarer than formerly.—ID.

An afternoon among the Coleoptera in the Chatham district.—Saturday, June 12th, was an ideal summer's day—calm, hot, and cloudless—and as the afternoon was at my disposal, I resolved to make the most of it in the way of collecting.

Arriving at Snodland soon after mid-day, I commenced operations by taking *Donacia affinis* freely on rushes, within five minutes' walk of the railway station; and by sweeping the luxuriant herbage in the damp thickets and meadows close to the town, the following species were obtained, among many others:—*Ceuthorrhynchus urticae* (4), on *Stachys*, as before: this is a curiously local species, occurring in only one spot a few yards in extent; *Malachius marginellus*, six examples by brushing flowers, besides one or two more lost by reason of its extreme activity in the net; *Anthocomus fasciatus*, *Telephorus oralis* and *T. figuratus*, *Dryophilus pusillus*, *Psylliodes picina*, *Limnobaris T-album*, and *Bagöus alismatis* (both common), *Rhinoncus gramineus*, *Poöphagus sisymbrii*, *Apion pubescens* and *A. unicolor*, &c. About 4 p.m. I took the train back to Halling, and walked across the chalk downs to the south side of Cobham Park, taking on the way *Melandrya caraboides* (new to my local list), *Rhagonycha unicolor*, *Ceuthorrhynchidius nigrinus*, *Ceuthorrhynchus asperifoliarum*, and *Thyamis exoleta*, on *Echium*, the latter literally in thousands, *Lamprosoma concolor*, *Apion Spencei* (common on *Mercurialis perennis*), *Liodes orbicularis*, and a single example of *Dryocates coryli*. Arriving at Cobham Park, a pair of the scarce and pretty little *Trachys pumila* was a welcome sight in the sweeping-net, it being new to the district; and while brushing about in the hope of finding more, *Homalota scapularis* (several), *Throscus carinifrons*, *Plagiogonus arenarius*, *Anisotoma punctulata* (several of both sexes), and *Gymnetron melanarius* turned up, among others. Soon afterwards I made the best capture of the day, this being an example of the very rare *Mordella aculeata*, which occurred by brushing long grass at the edge of the Park. Returning through Cobham Great Wood, I had just time (at the risk of missing my train home) to examine a few felled and barked oaks at the Strood end, where *Oxytelus insecatus*, *Pediacus dermestoides*, *Callidium variabile*, and *Acalles roboris* made a good finish to a very satisfactory afternoon's work.

I may here record the occurrence to me for the first time in the Chatham district of *Hæmonia Curtisi*, having taken a few specimens at the end of May on *Potamogeton pectinatus* in a shallow ditch at Cuxton. As at Sheerness, it was accompanied, but very sparingly, by *Bagöus limosus*, Gyll. (*petrosus*, Wat. Cat.), *Dytiscus circumflexus*, &c.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: June 14th, 1897.

The Entomological Society of London and Colonial Entomologists.—At a Special Meeting of the Society held on June 2nd, an alteration in the Bye-Laws was made, which should have the effect of causing an influx of new Fellows resident in our Colonies, &c. Hitherto all British subjects, wherever they were located, have been liable for the Admission Fee of Two Guineas. Under the new rule British subjects and foreigners alike residing *permanently* abroad are exempt from the Fee. This we think is a salutary alteration, and one that should obviate what has often been a source of misunderstanding. Of course it is prospective only, and does not affect any existing Fellow; neither does it concern any one one who, for pleasure or profit, may be *temporarily* located out of the United Kingdom.—Eds.

Reviews.

DESCRIPTIVE LIST OF THE BRITISH ANTHOMYIDÆ: by R. H. MEADE, F.R.C.S. In two Parts, pp. 79, 8vo. London: Gurney and Jackson. 1897.

This is a Second Edition of the List published by Mr. Meade in this Magazine for 1881—83, and revised to date. As the author is an acknowledged authority on this special group of *Diptera*, it cannot fail in being useful. About 250 species are tabulated and briefly described, contained in 32 genera. The addition of an Index would have rendered it more complete.

ECONOMIC ENTOMOLOGY for the Farmer and Fruit Grower, and for use as a Text Book in Agricultural Colleges and Schools: by JOHN B. SMITH, Sc.D. Pp. 481, 8vo. Philadelphia and London: J. B. Lippincott Company. 1896.

This is a general introduction to Entomology, in which the economic element is more prominent than is usual in such works. It is divided into three parts, viz., "Structure and Classification," "The Insect World," and "Insecticides, Preventives, and Machinery." Prof. Smith's name is sufficient guarantee for its general accuracy, and it should prove useful as a Text Book for those principally interested. Of course it is unequal, because some groups although large in extent have no special economic bearing, and are passed over in few words in consequence. There are nearly 500 illustrations (some of them whole page) in the text, most of them good, many excellent. Almost all have done duty before, and for accuracy and beauty of finish, none surpass those to which the familiar monogram of "C. V. R." is attached. A very few are distinctly bad, such for instance as Nos. 41, 82, 191 and 473. And we make bold to say that the perfect insect in fig. 44 has no connection other than ordinal with the larva and case placed by its side, and that the name assigned to it is wrong. The work should be in the library of all interested in Economic Entomology as a book of reference.

Obituary.

Dr. Fritz Müller.—Johannes Friedrich Theodor Müller (better known as "Fritz" Müller) died at Blumenau in the Province of Santa Catharina, Brazil, on May 21st. He was the son of a clergyman, and was born at Windisch-Holzhausen on March 21st, 1822, and came of a family of Naturalists, of whom his younger brother Hermann, who pre-deceased him, was one of the most prominent. Fritz was educated for the medical profession, but appears to have settled down to scholastic duties in Germany until about 1852, when he lost his appointment during the political troubles of the time, and emigrated to the newly founded German colony at Blumenau in Brazil, establishing himself as a farmer; but he soon after accepted a position as teacher of mathematics at Desterro, situated on an island close to the Brazilian coast. He returned to Blumenau about 1867, and remained there until his death. Long before proceeding to South America Müller had made a reputation for himself as an observant philosophical naturalist, and the luxuriance of animal and vegetable life in his semi-tropical Brazilian home gave a strong impulse to his studies in the same direction. In 1863 appeared his work "Für Darwin" (of which

an English translation by Mr. Dallas was published in 1869, under the title, "Facts and Arguments for Darwin"). Both he and his brother Hermann had early become enthusiastic disciples of Darwin, and the latter regarded him as one of the first, if not *the* first, of observers of the day. It may be said that his studies embraced the whole field of zoology and botany, yet it was on insects that some of his most remarkable observations were made, and several special papers on *Diptera*, *Lepidoptera*, and *Trichoptera* could be mentioned as models of close and accurate biological details. And naturally he laboured under considerable disadvantages owing to his isolated position. This entailed much correspondence with specialists in Europe and elsewhere, who recognised in him a man of genius of the first water, even if they did not in all cases fall in with his philosophical views to the fullest extent. His closely written letters, with explanatory drawings, were always full of interest. His published papers at the time of his death probably numbered about 150, of which some appeared in the Trans. Entomol. Society of London, of which he was elected an Honorary Member in 1884.—R. McL.

Societies.

COMMITTEE FOR PROTECTION OF INSECTS IN DANGER OF EXTERMINATION.—At a Meeting of the Committee held on June 2nd, it was resolved that the following species of *Lepidoptera*, being local species in danger of extermination, be more particularly recommended for protection, in accordance with the final paragraph of the Memorandum of Association :—

Papilio Machaon, L., *Leucophasia sinapis*, L., *Pieris crataegi*, L., *Melitæa Athalia*, Esp., *Melitæa Cinzia*, L., *Apatura Iris*, L., *Limenitis Sibylla*, L., *Thecla pruni*, L., *Polyommatus Arion*, L., *Cyclopides Paniscus*, Fab., *Hesperia Actæon*, Esp., *Trochilium scoliaeforme*, Hüb., *Zygæna meliloti*, Esp., *Zygæna exulans*, Hoch., *Nola strigula*, Schiff., *Nola centonalis*, Hüb., *Nola albulalis*, Hüb., *Eulepia cribrum*, L., *Porthesia chrysorrhæa*, L., *Clisiocampa castrensis*, L., *Drepana sicula*, Schiff., *Dipthera Orion*, Esp., *Acosmetia caliginosa*, Hüb., *Dianthæcia irregularis*, Hufn., *Plusia orichalcea*, Fab., *Epione vespertaria*, L., *Fidonia conspicuata*, Schiff., *Scoria dealbata*, L., *Cidaria reticulata*, Fab., *Lithostege griseata*, Schiff., *Agrotera nemorialis*, Scop., *Pterophorus rhododactylus*, Schiff.

Further resolved that a copy of this list be forwarded to every Society co-operating with this Committee, with an explanation (where necessary) that the Committee does not desire to hamper any local Society in any more stringent action proposed to be taken by it for the protection of local species.

Also resolved that each such Society be invited to delegate one of its Members who shall be received as a Member of this Committee.—CHAS. G. BARRETT, *Hon. Secretary*, 39, Linden Grove, Nunhead, S.E.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
May 27th, 1897.—Mr. R. ADKIN, F.E.S., President, in the Chair.

Mr. Bainbridge Prest, M.A., of Sydenham, was elected a Member.

Mr. South exhibited a box of *Tephrosia*, which he had purposely mixed as regards dates and localities; he asked for information as to names, but no one essayed to pick out the two forms. Mr. Auld, larvæ of *Boarmia roboraria* and *Limenitis sibylla* from the New Forest, and also larvæ of the two *Phorodesma*, *P. bajularia* and *P. smaragdaria*, and remarked on the close similarity of the former in its covering of oak remnants to the groups of brown scales enclosing the buds on the oak twigs. Mr. Moore, male and female specimens of the remarkable Mexican Pierid, *Pyrisitia proterpia*, a bright and rich orange-coloured insect. Mr. Tutt, specimens of *Ascalaphus coccajus*, a Neuropterous insect allied to the Ant Lions from Digne, with notes on its history, variation and occurrence; it was originally described as a butterfly. Mr. Edwards, a living *Mantis* sent from Cannes by Dr. Chapman; he had had it some six weeks, and it fed readily upon small cockroaches and flies; he also showed young larvæ of *Saturnia pavonia*, from ova laid by a female taken at Digne. Mr. Adkin, series of *Cidaria suffumata* from various localities, including Forres, Dover, Boxhill, and Loch Lagan; those from the latter locality were var. *piceata*. Mr. Tunaley, specimens of the resinous nodules of pine sent him from Scotland, from which he had bred *Retinia resinella*; he also showed sections of the same, and made remarks upon the peculiarities of the cocoon and the method of emergence of the species. Dr. Chapman exhibited among other insects a living specimen of *Charaxes jasius*, which had just emerged from the pupa of a larva taken at Cannes. Mr. Step communicated a short paper, entitled, "Note on a Variety of *Portunus marmoreus*," a crab taken at Portecatho, and sent for exhibition coloured drawings of the same. Mr. Tutt read a paper, entitled, "Spring Butterflies on the Riviera," and exhibited a large number of species in illustration.—HENRY J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *June 2nd*, 1897.—MR. R. TRIMEN, F.R.S., President, in the Chair.

The President referred to the great loss the Society had sustained by the death of Dr. Fritz Müller, one of its Honorary Fellows, and to his distinguished services in the cause of entomological science, and especially in forwarding the theory of the Origin of Species.

Dr. Chapman exhibited the larva of *Eriocephala Allionella*. Mr. Jacoby, a fine example of the large Hepialid, *Leto Venus*, from Plettenburg Bay, S. Africa. The President said that the insect afforded an interesting case of localized distribution, being confined to an area of about fifty by fourteen miles, whereas the larva fed in the wood of *Virgilia capensis*, a common and widely-distributed leguminous tree. The insect was very conspicuous, and could not have been overlooked in other localities. Mr. Burr, a pair of gynandromorphous earwigs, *Chelisoches morio*, Fabr., from Java, with ordinary males and females for comparison. In both specimens the right branch of the forceps was of the male, and the left branch of the female form. The Hon. Walter Rothschild, a series of specimens of *Eudæmonia brachyura*, Drury, and *E. Argiphontes*, Kirby, to show the differences between these two West African Saturniid moths. The distinctness of the latter species had been doubted, as until recently it was only known by the unique examples in the Dublin Museum,

and the three published figures of these were materially different from each other. A comparison of the series exhibited showed the two species to be abundantly distinct. Mr. Kirkaldy, fifty specimens of *Notonecta glauca*, Linn., to show the extreme range in size and colour of this widely-distributed species. The discussion on Mimicry and Homœochromatism in Butterflies was then resumed by Dr. Dixey, who replied to the comments of Prof. Poulton and Mr. Blandford on his paper. He did not regard the phenomenon of reciprocal convergence as necessarily a demonstrable feature in Müllerian mimicry; it was merely potential. With respect to mimetic *Pieridæ*, he did not consider that they were invariably protected, but that, in certain cases, they were shown to be so by the indications of convergence exhibited by the models. Mr. Elwes thought, from his personal experiments as a collector, that there was too much assumption about both the Batesian and Müllerian theories. In many supposed cases he doubted whether the so-called models were protected by taste or smell. He had previously referred to the extraordinary superficial resemblance between two *Pieridæ* found in the high Andes of Bolivia, and two others found at similar elevations in Ladak, and was inclined to think that similar conditions of environment produced similar effects. Mr. J. J. Walker, Sir George Hampson, and Col. Yerbury gave evidence, from personal experience in the Tropics, as to the extreme rarity of butterfly-destruction by birds. The President admitted its rarity in Africa, but stated that he had seen birds, especially the Drongo shrike, chasing butterflies. Mr. Blandford called attention to a recent paper by M. Piepers, who, as the result of twenty-eight years' observation in the Malay region, had seen four instances only of butterflies, two of which belonged to the "protected" genus *Euplaea*, being attacked by birds, and had been driven to the conclusion that the phenomena of mimicry had nothing to do with natural selection. Papers were communicated by the Rev. F. D. Morice, on "New or little known *Sphegidæ* from Egypt;" and by Prof. A. R. Grote, on "Changes in the Structure of the Wing of Butterflies." A Special Meeting was then held at which the proposed amendments and additions to the Society's bye-laws were adopted.—W. F. H. BLANDFORD and F. MERRIFIELD, *Hon. Secretaries*.

OBSERVATIONS ON COCCIDÆ (No. 16).

BY R. NEWSTEAD, F.E.S.,

CURATOR OF THE GROSVENOR MUSEUM, CHESTER.

The following observations apply chiefly to a small, but remarkable, collection of *Coccidæ* found associated with ants in various parts of the world, which were kindly sent to me by E. Wasmann, of Exaeten, near Roermond, Netherlands, early in the spring of 1896. Very little can be said of the external coverings of the insects, as they were all preserved in spirit.

TYLOCOCCLUS, *n. g.*

♀ adult with a series of large, projecting, marginal tubercles; anal tubercles large. Anal ring and antennæ as in *Dactylopius*.

TYLOCOCCLUS MADAGASCARIENSIS, n. sp.

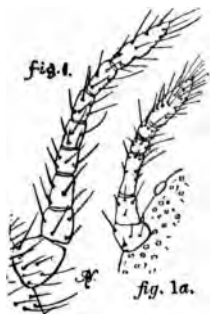
♀ adult (fig. 1) ovate, frequently narrowed behind; at the extreme margin of the body a series of 29—31 large projecting tubercles (fig. 2), each bearing at the extremity several short stiff spines, and at the sides a few fine hairs and small circular spinnerets. Anal lobes, a little larger than those at the margin, have a single long hair at the apex, and a few short spines. Antennæ (fig. 3) of 8 joints; 3 and 8 longest; 1 and 2 a little shorter and widest; 4, 5, 6, and 7, shortest and equal; all with a few fine short hairs. Mentum biarticulate, has many fine hairs at the apex. Legs stout, shorter than antennæ; digitules very slender. Anal ring with six very long hairs. Dermis above with four large eye-like glands: two above the rostrum, and two on the penultimate segment. Long., 1.50—2 mm.



Hab.: Madagascar, in nests of *Crematogaster Schenki*, For. This most remarkable insect clearly belongs to the *Dactylopiidæ*, and is unique in having the large marginal tubercles.

DACTYLOPIUS HIRSUTUS, n. sp.

♀ adult short-ovate. Antennæ (fig. 1) of 8 joints; 4, 5, and 6 shortest, and in length equal; 8 much the longest, and slightly fusiform. Mentum biarticulate, long, conical, with three or four long hairs at apex, and one or two at the sides; unexpanded filaments a little longer than mentum. Legs short, stout, about one-third longer than antennæ, with a few short isolated hairs; digitules of the tarsi simple; those of the claw more dilated and stouter. Anal ring with six long hairs. Anal lobes minute, each with a number of hairs of the same length as those of the anal ring; the usual long hairs are wanting in all the specimens examined. There are two large eye-like glands just behind the antennæ, and two on the last abdominal segment. Dermis above thickly set with long fine hairs. Long., 2—2.50 mm.



♀ second stage short-ovate, attenuated behind. Antennæ of 6 joints, of which the last is much the longest and widest. Mentum biarticulate. Anal lobes normal; each with a single long hair, and several others almost as long. Anal ring of six hairs. Dermis above with fewer, but longer, hairs than those in the adult; those at the margin still longer, and almost forming a fringe. Dorsal glands as in the adult.

Larva with very long hairs at margin and on the dermis above; those of the latter forming three broad longitudinal lines.

Hab.: Bombay district, in a hollow bamboo, with nests of *Crematogaster* sp., and *Sima nigra*, J.

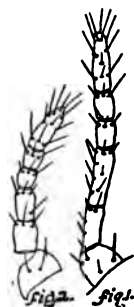
Collected by Mr. Rob. Ch. Wroughton.

The hirsute character of the dermis, and the unique habitat, are the distinguishing features of this species.

RIPERSIA FORMICICOLA.

Ripersia formicicola, Maskell, Trans. New Zealand Inst., 1891, p. 38.

The examples before me show a great variation in size, and in the character of the antennæ. The smallest specimens (1.25 mm. long) have comparatively long 6-jointed antennæ (fig. 1). A second form, about the same size as the preceding, presents 7-jointed antennæ; each joint being clear and distinct. And a third form, much larger (2.50 mm. long), has shorter antennæ (fig. 2) and legs. Mr. Maskell's description (*l. c.*), and some specimens he has sent me, agree in every way with the small examples described above, which, I presume, are second stage ♀, or early adults. The example having 7-jointed antennæ may be an intermediate form; and the larger specimens are, I presume, the old adults.



The specimens were collected by Mr. W. W. Smith in nests of *Monomorium nitidum* at Ashburton, New Zealand.

I have also two early adult ♀, taken by Mr. R. C. Wroughton in company with *Icerya formicarum*, and *Crematogaster subnuda*, M.; this is the first recorded occurrence of the species outside New Zealand.

The figures are drawn to one and the same scale.

RIPERSIA EUROPEA, *n. sp.*

♀ adult widely ovate, densely clothed with white mealy wax; segmentation more or less distinct. Antennæ (fig. 1a) of 6 joints; 3 and 6 are longest, and in length nearly equal; 4 and 5 equal, and much the shortest; all with long fine hairs. Mentum doubtfully biarticulate, thickly set with long hairs. Legs ordinary; anterior pair shortest; tibiae wide; upper digitules wanting; lower pair simple, slender hairs. Anal ring with six long hairs; intervening spaces with a double circle of minute tubercles; those of the inner circle longest. Anal lobes minute; each with a single long hair, and several minute ones, and a number of rather large circular spinnerets. Dermis above crowded with small circular spinnerets and minute hairs.

Long, 1—1.50 mm.

Hab.: Guernsey (W. A. Luff, 1895); Watville, Guernsey (Brockton Tomlin, August, 1896), on roots of various plants in ants' nests. Near Rheim, Germany (E. Wasmann, 1896), with *Lasius alienus*, F.

Mr. Tomlin says: "The Coccid is very plentiful under stones in

ants' nests for about a mile on both sides of S. Sampson's harbour." And, in reply to a letter in reference to the habits of this species and *R. Tomlinii*, Newst., Mr. Tomlin sent the following interesting communication: "I have visited Moulin Haet, the original locality of *R. Tomlinii*, and secured a supply of what I take to be that species. They live high up on the cliffs in the nests of a largish black ant, though I found some under stones where there was never an ant to view. On the other hand, the species I sent last week (*R. europæa*) lives under stones, *within a few yards* of high-water mark; the ant is different, and though there are nests of two or three other species of ants living all along the shore as plentifully as this kind, yet the Coccid never favours their nests, as far as I could discover (and I made a point of ascertaining this). The ants show great eagerness in carrying them off, and are very reluctant to relinquish their burden. What strikes me particularly about this insect is the way it occurs on the under surface of the bare stones. I turned up one yesterday with between 40 and 50 of all sizes dotted about the stone. It is infrequent in the actual nest on plant stems, though I have secured an example of this habitat to send you." August 26th, 1896.

RIPERSIA TUMIDA, *n. sp.*

♀ adult ovate, tumid, and extended behind. Antennæ (fig. 1) of 7 joints; the last longest and fusiform; 2, 3, and 4 shorter and subequal; 5 and 6 shortest. Mentum biarticulate; filaments short. Legs rather long, slender; tarsi short; a little more than a third the length of the tibiæ; digitules absent, but they may have been broken away, as a slight scar was traceable at the point where they are usually attached. Anal lobes obsolete; and in the specimens before me there are no hairs to indicate the position of the lobes. Anal ring large, with six long hairs. Dermis above almost hairless; but with many circular spinnerets placed very close together.

Long., 2.75—3.50; wide, 1.75—2.50 mm.

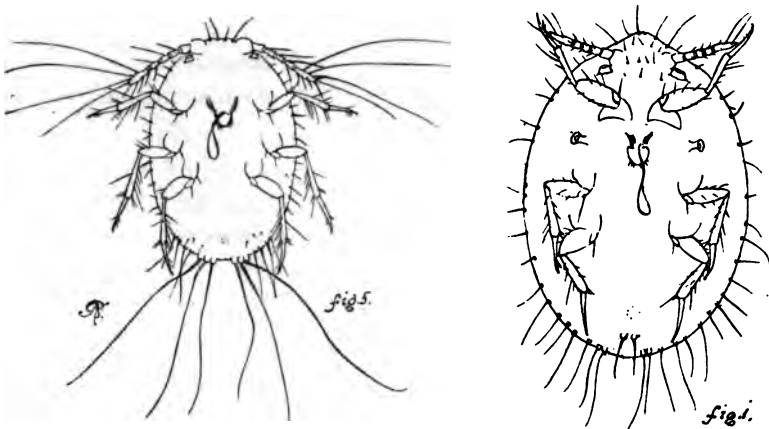
♀, second stage. Mentum biarticulate; filaments a little longer than mentum. Antennæ (fig. 2) of 6 joints; 3 and 6 are longest; 2 as long as 4 and 5 together. Anal lobes minute. The latter and each abdominal segment at the margin with a few minute spines.

Hab.: Flémecèn, Algeria, with *Camponotus Etlii*, var. *concolor*, For. M. Forel collector.

The seven-jointed antennæ, and the tumid character of the body, are the distinguishing features of this species. The absence of hairs on the anal lobes may be of importance; but my series is much too small to be certain of the constancy of this character.

ICERYA FORMICARUM, n. sp.

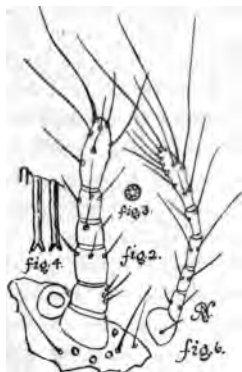
♀. ♀ 3rd stage (fig. 1) short-ovate. Dermis *above* densely clothed with very long opaque hairs, and has very many large circular spinnerets (fig. 3). Antennæ (fig. 2)



of six joints, 1 to 5 tapering, and of these 3 is the longest, 6 longest of all; each joint with a few short hairs and the last with three or four long ones. Legs strong, opaque, much longer than the antennæ, and with many long hairs; digitules to claws and tarsi replaced by simple fine hairs. Eyes subconical, placed close to the base of the antennæ. Rostrum very short, apparently biarticulate; apex at each side with three or four long, broad, bifurcate hairs (fig. 4). Anal ring simple, without hairs, but the dermal hairs surrounding it more numerous.

Long., 1.50 mm.

Larva (fig. 5) short-ovate; eyes, antennæ and hairs, semi-opaque, brown. Eyes as in the ♀ described above. Antennæ (fig. 6) six-jointed; joint 1 very broad; 2, 3, 4 and 5 almost equal in length; 6 club-shaped and longer than 4 and 5 together, has four very long hairs and numerous shorter ones; there are several short hairs on the other joints. Mentum apparently monomerous, has the bifurcated hairs at apex as in the ♀. Legs normal. Anal ring simple. The six caudal hairs are very long and stout. Dermis almost covered with hairs, as in the ♀.



Hab.: Bombay District, in company with *Ripersia formicicola*, Maskell, in nests of *Crematogaster subnuda*, Mz. Collected by Mr. R. C. Wroughton.

The discovery of a subterranean *Icerya* associated with ants is very remarkable indeed; were it not for this fact I should certainly not have established a new species from the material at hand. At the same time the characters are distinct, and I feel justified in describing

it. *Icerya Palmeri*, R. and H. (Insect Life, Vol. iii, p. 104), was established from similar material, but the habitat was in no way remarkable.

KERMES, sp. ?

A single ♀ taken at Perrégaux, Algeria, with *Aphænogaster testaceopilosa*, L. The specimen was of small size, perfectly spherical, and of a brilliant crimson colour. It is not possible to determine the species or to describe it.

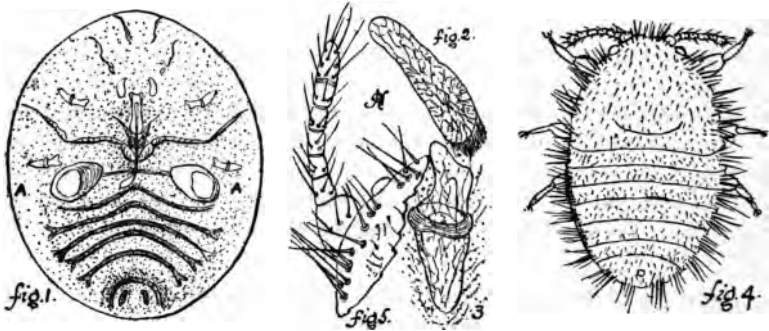
KERMICUS, n. g.

♀. Insect in all stages with the anal lobes perfectly obsolete.

♀. Adult apparently naked, apodous, and without antennæ; anal ring with many hairs; mentum monomeric.

KERMICUS WROUGHTONI, n. sp.

♀. Adult hemispherical, shining, piceous; surface very finely rugose under the microscope, margins with large irregular depressions; ventral surface very flat and



covered with a layer of white secretion; segments above widely separated and faintly indicated, beneath they are very narrow and sharply defined. On the ventral surface, between the thoracic and first abdominal segment, on each side, a large, almost hemispherical, tubercle. Rostrum lying in an ovate cavity or recess. Spiracles opening into large depressions. The foregoing characters are external and can be seen without preparation. After treatment with potash and viewed by transmitted light, the ventral area appears as shown in fig. 1. At A. A. are seen the ventral tubercles with their strong internal walls. Mentum monomeric; filaments short, resting in a cavity formed in the chitinous wall of the thoracic and first abdominal segment. At the base of the rostrum are two large elongated glands (fig. 2) with faintly reticulated surface, and above them several others of the same structure, but smaller and of irregular outline. Spiracles (fig. 3) very large. Dermis thickly set with circular glands of various sizes. Anal ring very small, with 17 hairs.

Diam., 10 m.m. High, 4.50 m.m.

♀. Second stage closely resembling the adult, but the segmentation above more pronounced and the colour pale yellowish-brown.

Diam., 2.50—4 m.m. High, 1.50—2 mm.

Larva (fig. 4) ovate. Antennæ (fig. 5) of 7 joints; 1st much the widest, and

about the same length as the last; 2, 3, 4, 5, and 6 of equal length. Rostrum short, apparently monomerous. Anal ring with 17 hairs, 9 on one half, 8 on the other. Legs ordinary, digitules simple. Margin with a fringe of very long hairs, and the dorsum above is almost covered with much shorter ones.

Hab.: Bombay District, attended by *Pecophylla smaragdria*, F., where it was collected by Mr. R. C. Wroughton. The name of the food-plant is not given.

Externally the adult ♀ bears a very strong resemblance to a *Kermes*, but the absence of anal lobes in all stages of the ♀ precludes it from that genus. The character of the larva, too, is very marked, and its 7-jointed antennæ are abnormal, but I do not think we can consider such a character of generic importance, as some ♂ larvæ are said to possess the same number of joints to the antennæ. At the same time all my examples present 7-jointed antennæ; the character, therefore, must be common to both sexes.

Chester: November, 1896.

HARPALUS RUFICORNIS, F., DESTRUCTIVE TO RIPE STRAWBERRIES.

BY ROBERT McLACHLAN, F.R.S., &c.

It is now at least ten years since this very common "Ground Beetle" was first sent to me as destructive to strawberries. At first I was thoroughly incredulous, and inclined to think it was in search of other creatures which were the real depredators. There now seems to be no doubt of the truth of the accusation.

In the No. of this Magazine for December, 1895 (p. 283), Canon Fowler mentions that Miss Ormerod had sent him examples of the beetle for determination, with a note that it was destructive to strawberries. In the Journal of the Royal Agricultural Society for December, 1895, Mr. Cecil Warburton, Zoologist to the Society, enters at some length into the question.

This summer the attacks seem to be most serious, and I hear of growers for market who have lost nearly all their crops from this cause. The beetles do not appear to eat the flesh of the fruit, but extract the juice till the berries collapse. There can, I think, be no doubt that the presence of the beetles is more or less directly connected with the "mulch" or litter placed round the plants, primarily as manure, and secondly to prevent the ripe fruit from touching the ground (Mr. Warburton has already slightly alluded to this subject).

The litter harbours the beetles by day, and from it they sally forth at night to attack the fruit. Thousands could be destroyed by turning over the litter in the day time, and it might be possible to saturate it with some substance that would render it noxious to the insects without communicating any flavour to the fruit. This is a matter for suggestion and experiment.

Lewisham, London :

July 15th, 1897.

DIANTHÆCIA LUTEAGO, var. *BARRETTII*, IN CORNWALL AND NORTH WALES.

BY C. G. BARRETT, F.E.S.

My friend Major A. Ficklin, returning a day or two ago from a trip to the Land's End, Cornwall, has brought with him some insects of unusual interest, in four specimens of *Dianthæcia Barrettii*, or to be more strictly accurate, *D. luteago*, var. *Barrettii*. These examples, two of which, ♂ and ♀, are in exquisite condition, are, with the exception of a specimen taken some years ago by Mr. W. C. Boyd in North Devon, the only known English examples of this curiously local species. They represent a local race different from those hitherto known, though leaning more toward the Irish variety than to the one previous English specimen; but the light clouding at the base of their fore-wings, and also in the hinder area, is extended and of a distinctly glaucous hue, while the pale middle cloud is less distinct, and the broad oblique stripe consequently less noticeable. The hind margin appears also to be slightly more dilated, and the fore-wings consequently broader and more blunt, but this may arise in part from the perfection of the cilia. All were taken at dusk hovering at flowers of *Silene maritima*, and were the result of careful scrutiny of this attractive plant night by night for a fortnight. It does not therefore appear that the insect is more common on the Cornish cliffs than on those of Howth.

At the same time Mr. F. C. Woodforde has sent for examination a fine female of the same species taken by him early this month in Carnarvonshire, North Wales. This specimen is darker than any previously seen, and without the tinge of purple in its brown colour, this being replaced by a greyer black tinge, and the pale shades are scarcely so large as in typical specimens, while the apex is certainly more pointed. This is the first instance of which I have any knowledge of this species in North Wales, and the specimen is of a form quite unlike that reared

by Mr. W. F. H. Blandford from a larva found in South Wales. The local races of this insect are extremely interesting, more especially as none of them show any tendency toward the type of *luteago* as known on the Continent.

39, Linden Grove, Nunhead, S.E. :

June 26th, 1897.

THE DIAMOND-BACK MOTH: *PLUTELLA CRUCIFERARUM*, Z. (1843),
A SYNONYM OF *CEROSTOMA MACULIPENNIS*, CURT. (1832).

BY THE RIGHT HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S.,

AND

JOHN HARTLEY DURRANT, F.E.S., MEMB. SOC. ENT. DE FRANCE.

In defiance of such rules as govern the use of names by adherence to the ordinary law of priority, our little friend has passed under many an alias, and it is time that his godfather's authority should be quoted and his proper title restored. There are those who think that some apology is necessary in such cases, but if a man's name were John he would quickly call upon the person who dubbed him Richard to show cause or climb down.

No apology is asked in this case, and none will be offered.

Much confusion in nomenclature existed between the honeysuckle feeder and the smaller species feeding upon various *Cruciferae* until Zeller, in 1843, rightly restricted the Linnæan name *xylostella* to the honeysuckle feeder, and called the smaller species *cruciferarum*, Z. Unfortunately, in Staudinger and Wocke's Catalog *xylostella*, L., was applied to the smaller species, *cruciferarum*, Z., being cited as a synonym; this error was corrected in the errata on p. 425, but the correction has been much overlooked, and at the present moment in the Exhibition Gallery of the British Museum *cruciferarum* is still wrongly called *xylostella*.¹

In the synonymy as given in Staudinger and Wocke's Catalog, p. 281, No. 1626, will be found on lines 2 and 3—

"*maculipennis* Curt; Stph. p. 342; Wd. 1548;"

Dr. Wocke should have traced this synonym to its origin, for as

¹ We have since had the opportunity of examining the Linnæan Collection. In it are six specimens of the honeysuckle feeder unlabelled, but these are subsequent additions to the cabinet. There is only one specimen labelled "*xylostella*," and this is *cruciferarum*, Z. From the history and present condition of this collection, we are not disposed to consider Professor Zeller's arguments at all affected by the existence of this specimen so labelled, some of Linnæus' labels having evidently been attached to specimens which do not agree with his descriptions, while the actual specimens described remain unlabelled, but easy to recognise by referring to his published works.—W. and D.

Stephens' citation of 1834 was anterior to Zeller's paper of 1843, it was obvious that if the synonymy were correct, Curtis's name was entitled to precedence over Zeller's. The name *maculipennis* was first used by Curtis in the first edition of his "Guide" in 1831, but being unaccompanied by description or citation cannot be regarded as the correction of a known error, and must be treated as merely a MS. name. On the second page of the explanation of Plate 420 in the British Entomology (1832), however, the species was amply described under the name *Cerostoma maculipennis*, and it is obvious that Curtis's type was a ♀ of *Plutella cruciferarum*, which must therefore sink as a synonym of *maculipennis*, at least until authority can be shown for the use of an earlier name if such exist. A careful search has so far failed to disclose any evidence that the species was known (as distinct from the honeysuckle feeding *xylostella*) to any entomological author preceding Curtis. Under Curtis's name Stephens, in his "Illustrations," described the same species, but Wood, while correctly referring to *annulatella* and *maculipennis* in the text of his Index, p. 223, Nos. 1547 and 1548, unfortunately transposed his figures on the plate, so that *maculipennis*, Wd., text, = **annulatellus*, Wd., fig. 1547, and *annulatellus*, Wd., text, = **maculipennis*, Wd., fig. 1548. Stainton, in the List of Specimens of British Animals in the British Museum, XVI, *Lepidoptera* on pp. 43-5 (1854), gives the correct synonymy (as above), but omits to sink *cruciferarum* as a synonym of *maculipennis*. He quotes the date of Curtis's Pl. 420 as 1835, but this cannot be correct, for this plate and its accompanying letter-press is cited by Stephens in the part of his Illustrations dated 31-XII-1834 (vol. IV, p. 342), and the explanation of Plate 461 is quoted in the Magazine of Nat. Hist., IV, 437 (IX, 1833), in a letter dated by Prof. Babington 2-VIII-1833, showing that Curtis's plate was probably correctly dated 1832.

The following is the synonymy of the Diamond-back moth, omitting references which have no bearing on the nomenclature of the species :—

PLUTELLA MACULIPENNIS, Crt.

= *cruciferarum*, Z.; n. syn. = *galeatella*, Mab.

[n. g. *maculipennis*, Crt., Guide, 186, No. 1031, 3 (1831) MS.]: *Cerostoma maculipennis*, Crt., Br. Ent., Pl. 420 (expl. p. 2) (1832), ♀; Sph., Ill. Br. Ent., Haust. IV, 342 (1834); Crt., Guide, 2 edn., 214, No. 1031, 3 (1837); Wd., Ind. Ent., 223, No. 1548 (1839): *Cerostoma* **annulatellus*, Wd., Ind. Ent., Pl. 49, 1547 (1839); *Plutella cruciferarum*, Z., Stett. Ent. Ztg., IV, 281-3 (1843); Stn., Syst.

Cat. Br. Tin. and Pter., 10 (1849), ♂ : *Plutella maculipennis*, Stn., Syst. Cat. Br. Tin. and Pter., 10 (1849), ♀ ; *Plutella brassicella*, Fitch, Rp. Nox. Ins. N. Y., I, 170-5 (1856) ; *Plutella limbipennella*, Clem., Pr. Ac. Nat. Sc. Phil., XII, 6 (1860), ♂ : *Plutella mollipedella*, Clem., Pr. Ac. Nat. Sc. Phil., XII, 6 (1860), ♀ ; *Plutella xylostella*, Stgr. and Wk. Cat., 281, No. 1626 (1871) : *Plutella cruciferarum*, Stgr. and Wk. Cat., 425, No. 1626 (1871) ; Stn., Ent. Mo. Mag., XIX, 251 (1883) ; *Tinea galeatella*, Mab., Miss. Sci. Cap Horn, 1882-83, VI, Zool. Ins. Lp., 34, Pl. III, 10 (1888).

As the Diamond-back Moth, alias *Plutella cruciferarum*, Z., is probably the only Tineid known by name to the general public, having been so freely mentioned in newspapers and the reports of economic entomologists throughout the world, it is very sad to have to lead the non-entomological student of insect scourges and pests into the regions of synonymy, and to ask him to unlearn the name *cruciferarum*, Z., and to substitute for it *maculipennis*, Crt., an older and forgotten name.

"Till old age and experience hand in hand
Lead him to death, and make him understand,
After a search so painful and so long,
That all his life he has been in the wrong."—*Anon.*

Merton Hall, Thetford :

June, 1897.

MICRORRHAGUS PYGMÆUS AND OTHER COLEOPTERA IN THE BLEAN WOODS, KENT.

BY J. J. WALKER, B.N., F.L.S.

On June 21st I went to Whitstable for a day's collecting in the extensive tract of woodland between that town and Canterbury, known as the Blean Woods. These woods are chiefly composed of oak and birch, with a good sprinkling of beech, hazel, willow, and aspen, the undergrowth in parts consisting largely of heather (*Calluna vulgaris*), and it looks a very promising locality for all orders of insects. In a recent clearing, *Coccinella distincta*, Fald. (*labilis*, Muls.), occurred in fair numbers, chiefly on young shoots of oak and birch in the vicinity of nests of *Formica rufa*, which were exceedingly numerous throughout the woods. This fine ladybird had been taken here many years ago by Mr. G. C. Champion (*cf.* Ent. Mo. Mag., ser. I, vol. iv, p. 187).

and curiously enough, on the following day I swept up a single example on the Sheppey cliffs, a surprising capture in this locality. While working for the *Coccinella*, I took *Labidostomis tridentata* (one ♀), and *Clythra 4-punctata*, quite commonly; *Elater balteatus*, *Rhynchites pubescens*, *Polydrusus micans* (common, but worn), *Xyleborus Saxeseni* (on felled oaks), &c. Sweeping in shady paths produced, among many other species, *Amphicyllis globus*, *Antherophagus pallens*, *Conipora orbiculata*, *Rhagonycha unicolor* (3), *Rhinoncus denticollis*, and, best of all, a fine ♂ *Microrrhagus pygmaeus*, this being the first record of its occurrence in Kent, as far as I am aware. *Tillus elongatus* turned up on the window of a house to which I had adjourned for some much needed liquid refreshment; and by brushing under an old hedge, quite close to Whitstable, a small series of *Cryptocephalus frontalis* was taken, in company with *Molorchus umbellatarum* (both sexes), *Cæliodes exiguus*, *Sunius intermedius*, &c., &c.

A second visit to the Blean Woods, on July 3rd, produced three more examples of *Microrrhagus pygmaeus* (2 ♂, 1 ♀) by sweeping under oak trees, and I was again so fortunate as to obtain *Mordella aculeata*, of which two specimens were swept off a very small patch of ox-eye daisy (*Chrysanthemum leucanthemum*), just at the entrance of the woods from the Whitstable side. Three examples of the queer little *Rhytidosomes globulus*, seen alive by me for the first time, were also very welcome; they occurred singly at long intervals, and came off young shoots of aspen and sallow. *Coccinella distincta* was still fairly plentiful, though less so than on my previous visit; and *Colony brunneum*, *Zeugophora subspinosus*, *Chrysomela varians*, *Melasoma longicollis*, *Mordellistena inæqualis* (one very large example), *Byctiscus betuleti*, *Deporaus megacephalus*, *Rhinoncus denticollis* (1), and many commoner species, turned up in the sweeping-net. *Antherophagus nigricornis* came out to the number of half-a-dozen (all ♀ except one) from a few sprays of honeysuckle flowers which I had plucked and put in my hat to take home. Previous to my entering the woods, *Cryptocephalus frontalis* again occurred, but only three examples. *Choragus Sheppardi* was swept off short grass by the roadside, and by beating a dead hedge, *Throscus obtusus* was obtained quite plentifully, along with *Cis alni*, *Gracilia pygmaea* (common), *Lissodema 4-pustulatum*, and other beetles usually found by this method of collecting.

23, Ranelagh Road, Sheerness :

July 5th, 1897.

HINTS ON COLLECTING ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F. L. S.

(Continued from page 140).

Many of our Midsummer Fossorials are attracted to the flower heads of umbelliferous plants. *Salix exaltatus*, *pasillus*, &c., are particularly partial to them, as is also *Ceropales maculata*, and possibly the rare *variegata* as well. The ♂ of *Myrmosa* frequents them, and many species of *Crabro*. The two species of *Tiphia* are particularly fond of *Daucus carota*, *femorata* sometimes occurring on it in large numbers. The two species of *Agenia* should be looked for in and around decayed stumps; they are both rare but have a pretty wide range of distribution, *hircana* being recorded from the New Forest and from as far north as Cumberland, *variegata* ranging from Ventnor to Yorkshire. Mr. V. R. Perkins says that the latter sometimes nests in gate-posts, the rubble of stone walls, or in sandy banks; both species may be easily recognised by the two dark bands across the front wings, although in the ♂ these are very faint.

The species of *Mimesa* appear about the middle of June, one of their number, *M. atra*, being of extreme rarity in this country. They are fond of flying round shrubs and settling on leaves, after the manner of *Pemphredon*, &c., but they also occur on flowers. The species are very closely allied, so that collectors should examine their captures very carefully, the length and shape of the petiole of the abdomen and the puncturation of the thorax and especially of its mesopleuræ are the chief distinguishing characters.

Among the *Anthophila* the various species of *Colletes* appear towards the end of June; *Daviesana* is common in many localities and frequents chamomile-looking flowers, such as *Anthemis*, &c.; *succincta* generally occurs on *Erica*; *fodiens* on *Senecio*; *picistigma* on chamomile flowers or on *Achillea millefolium*; *marginata* on Dutch clover or thistles. The large *C. cunicularia* appears to be an early spring species, occurring at Sallow blossoms in a few localities near Liverpool. *Daviesana* often forms extensive colonies in banks; near Bexhill last July I found it in great abundance, accompanied by almost equal numbers of its parasite, *Epeolus productus*, and one could not help wondering whether the *Epeolus* would gradually cause the extinction of the *Colletes*, which would mean the extinction of itself also, or what would happen to re-adjust the balance between the two.

All the species of *Prosopis* may be found in June and July. Most of them frequent bramble flowers or wild mignonette, but I

have taken the males of *P. cornuta* and both sexes of *P. Masoni* on *Achillea millefolium*. This latter, I am informed by M. Vachal, is probably synonymous with *distans*, Eversmann, but I do not propose to change the name until I am certain on this point, as the synonymy of the species with dilated scapes is very complicated. The very rare *P. dilatata* was also taken by Mr. Billups on *Achillea*. *P. punctulatissima*, Smith, has not been recorded since its capture by that author at Birch Wood, previous to 1855.

The males of *Halictus* and *Sphecodes* begin to appear about the end of June or the beginning of July, increasing in numbers as August approaches; they mostly frequent the flowers of yellow *Compositæ* and thistles, although they may be found on other flowers. The males of *cylindricus* and *albipes* are often met with in great numbers, those of the former species varying exceedingly in colour, some having the body quite dark, others with the intermediate segments red. The rarities in *Halictus* are—*sexnotatus*, whose ♀, as I mentioned before, occurs on *Scrophularia* and Bryony, and whose ♂ I have never had the good fortune to meet with, but which should occur on the same plants as the ♀; *quadricinctus*, which has occurred of late years near Seaford and Eastbourne, and also on the cliffs at St. Margaret's Bay on yellow composites; *longulus*, Smith, of which very little is known, and which occurs in the Isle of Wight at Bonchurch, Ventnor and Freshwater; a good series of both sexes would be a great assistance in determining its value as a species; *lævis*, Kirby, which is still known as British only by the original specimen in Kirby's collection, taken at Nacton, Suffolk; it is so like *villosulus* that it might easily be overlooked, but the impunctate body will distinguish it at once, the thorax is shining and sparsely punctured, very much as in that species; *maculatus*, the ♀ of which has occurred near Fairlight and at Weybridge and Blackwater, but no male has been recorded from this country, and *gramineus*, which has not been taken since Smith's time, when it was found on Cove Common, Hants. *Halictus* is a genus which would repay study from any collector, as the species are very closely allied, and there is great probability of new species yet being found.

Several of the rarer species of *Andrena* are to be found in July visiting the flowers of brambles, these are chiefly the second broods of the species which visit shallows in the early spring, but the second broods are less numerous, as a rule, in individuals than the first; for instance, *A. rosæ*, the typical form of which appears in July, used to be considered a great rarity, and as a matter of fact, is far from

common anywhere, whereas, one of its spring forms, *Trimmerana*, is exceedingly common. The females of the second brood are mostly more or less reddish on the abdomen, but there appear to be two forms in the second brood as in the first, a red bodied form (*rosæ* true), which corresponds with the spring *spinigera*, and a duller, more hairy form which appears to represent the spring *Trimmerana*, but in both spring and summer broods intermediate varieties occur. *A. bimaculata*, race *decorata*, Smith, is also a Bramble species closely resembling *rosæ* in general appearance, but distinguishable at once by the clathrate basal area of its propodeum; *dorsata* (*combinata*) and *gwynana* (*bicolor*), the names in brackets being the old names of the second broods, visit the same plant, as also a second brood of *pilipes*, *thoracica*, *Afzeliella*, and *minutula*, and the strictly summer species *coitana* and *lucens*; this last is probably overlooked, as the ♀ is exceedingly like that of *coitana*, but its less closely punctured mesonotum and scutellum will distinguish it, and the ♂ is abundantly distinct in the absence of the white clypeus. Bryony is attractive to several species, especially to *Andrena florea*, also a red bodied species like *rosæ* and *bimaculata*, but known from either of them by the clear, distinct puncturation of the abdomen.

Andrena Hattorfiana and *Cetii*, two of our most beautiful species, frequent the species of *Scabiosa* and appear in the latter half of July. The former is generally found on *S. (Knautia) arvensis*, the latter on one of the blue species. *Nomada armata*, our largest and rarest species, associates with *Hattorfiana*, but is very rarely met with. *Senecio jacobææ* (ragwort) attracts *A. nigriceps* and *tridentata*, the latter being a great rarity, which has occurred, so far as I know, only in the neighbourhood of Bournemouth and Norwich; the other species of the *nigriceps* group visit other plants, *simillima* being fond of *Rubus*, *fuscipes* of *Erica*, and being often very abundant on our Surrey heaths, and *denticulata* generally occurring on thistles. *A. argentata* is a very local species which occurs in scattered colonies on the heaths around Woking and Chobham, and extends as far as Bournemouth; it burrows in exposed sandy spots, and is sometimes accompanied by the rare little inquiline *Nomada alboguttata*. July and August are the best months to look for it; I have generally found it flying backwards and forwards near its burrows, very close to the ground, and consequently very difficult to catch. The *Nomada* flies more steadily and is easier to secure. *Macropis labiata*, which is a very local insect, and until Mr. Enock found it at Woking, one of our greatest rarities, occurs annually along the

Woking Canal on *Lysimachia vulgaris*, in August; it has been taken also at Norwich on thistles, and I find it here occasionally on those plants, but there is no doubt that it prefers the *Lysimachia*. On the Continent there is an inquiline bee which associates with it, *Epeloides cæcutiens*, but this is found on *Lythrum salicaria* (purple loose-strife); as this plant is also common along our canal, I have hopes that the *Epeloides* may possibly be found here also, although it has not been recorded from so far north as England.

Dasygaster hirtipes, which is one of our handsomest bees, may be found at this time of the year in sandy places, but it is local. At Littlehampton it used to be abundant; it is a most interesting insect to watch at its burrows, especially when it returns home with its enormous tibial brushes covered with pollen; like most of the *Andrenidæ* it is usually found in colonies. *Cilissa hæmorrhoidalis* is an August insect and frequents the bells of *Campanula rotundifolia*, which it creeps into and is quite hidden from view; it is not a common species; I have taken it several times by sweeping; the other species, *leporina*, is commoner, and visits various flowers.

The two species of *Panurgus* are both far from rare; they visit yellow composites, the males often spending the night in them curled up among the rays. On our sandy commons, both occur freely, and the rare *Dufourea* occasionally, *i. e.*, twice in ten years! Yellow composites again are the attraction.

Of *Rophites* as a British insect we only know the two examples taken by the Rev. E. N. Bloomfield in his garden at Guestling. It is exceedingly like an *Halictus*, but has only two submarginal cells in the front wings, it is also browner in tint; this appearance is due to the brown hairs with which the insect is covered. It occurs in Sweden, so there is every hope that it will again turn up here. In July and August several species of *Nomada* may be found associating with the second broods of *Andrena*. *N. fucata*, a rare species, associates with the second brood of *fulvicrus* (formerly called *extricata* by Smith), *jacobææ* and *solidaginis* occur on thistles and ragwort, but their hosts are not known for certain. *N. Roberjeotiana* appears in July; it is a rare species and generally occurs singly; on the heaths here I have met with it two or three times on the same ground where *Andrena analis* is found, so I suspect it may associate with that species. *N. obtusifrons* is also a July species; Mr. Bridgman thinks it associates with *A. coitana*, so it should be looked for where that species is found.

(To be continued).

A NEW BRITISH CHRYSID: *HEDYCHRIDIDIUM CORIACEUM*, DHB.

BY THE REV. F. D. MORICE, M.A., F.E.S.

I have for some time been expecting that this widely distributed species would turn up in our own country, and to-day (July 7th) I was greatly pleased by finding it in this neighbourhood.

It is almost exactly like our common species, *minutum*, Dbb. (? = *ardens*, Coq.) ; and though it is in no collection that I have seen, I have little doubt that it is mixed with *minutum* in some cabinets ; but the pubescence is distinctly shorter ; the puncturation of the thorax much finer, and more even and close, giving a dull, coriaceous effect (whence Dahlbom's name) ; and the postscutellum is deep blue, while in *minutum* (at least, in British specimens) this part is brassy or greenish.

Unfortunately, I do not know the *exact* spot where I found the insect, as I did not recognise it till my return, when I picked it out from among four or five of the common species in my collecting bottle; but it was certainly taken within a mile or two of the village of Ottershaw, on the road between Woking and Chertsey.

In my Synoptic Table (Ent. Mo. Mag., June, 1896, p. 126), the Division numbered 10 should now read as follows:—

10. Thorax somewhat smooth; its puncturation remote; abdomen with long scattered hairs at apex*integrum*.
Thorax closely punctured, abdomen merely pubescent at apex.
(a) Thorax coriaceous, dull; postscutellum deep blue*coriaceum*.
(b) Thorax coarsely and unevenly punctured, brilliant; postscutellum brassy...
minutum.
(= *ardens*, auctt.).

Brunswick, Woking:

July 7th, 1897.

NOTES ON SOME BRITISH HYMENOPTERA.

BY THE REV. F. D. MORICE, M.A., F.E.S.

Among various *Hymenoptera* which I have taken this year, chiefly in the neighbourhood of Woking, the following appear to deserve record : —

Xiphydria dromedarius, F.—Several males in a decayed willow trunk at Ripley (June 28th and 29th); F. Smith says it is common in such situations, but I never met with it before, and to judge from foreign price lists, it must be considered a rarity on the continent.

Chrysis fulgida, Linn.—Three males on a gate-post near Byfleet (June 14th) ; six females on palings at Woking (July 10th).

Chrysis succincta, Linn.—A female on an umbellifer (*Ænanthe crocata*?) near Ripley on June 29th ; two more females on a low road-side bank at Wisley, in the same district, on July 1st ; and a fourth in a similar spot at Woking on July 6th.

Hedychridium roseum, Rossi.—Three females at Chobham (July 8th).

Crabro aphidum, Lep.—A female flying about a hedge at Ripley (June 28th). This is one of our very rarest species, and I believe it is long since any capture of it has been recorded. I have several times re-visited the spot, but no other specimen has occurred.

Some of the rarer *Mimesidæ* seem to be less rare than usual here this year. Within a radius of ten or twelve miles from Woking I have taken several specimens each of *Mimesa Shuckardi*, Wesm., *equestris*, Fab., and *Dahlbomi*, Wesm., besides our commoner species, *bicolor*, Fab., and *unicolor*, v. de Lind.

Tachysphex unicolor, Pz.—One ♂, Chobham, June 24th ; one ♀, Oxshott, June 21st.

Astutus stigma, Pz.—Two females at Chobham (July 7th and 8th).

Odynerus (Hoplopus) reniformis, Gm.—Several females burrowing in their old locality at Chobham in June. I could find no males, and was disappointed in being unable to ascertain that any species of Chrysid was parasitic upon it. (In *spinipes* burrows a few miles off, I found *Chrysis bidentata*, Linn., in immense numbers, besides a few specimens of *neglecta*, Shuck., and a fair sprinkling of *ignita*, Linn. All these kinds I watched in the act of entering the wasp's tubes. *Chrysis cyanea*, Linn., occurred in the same spot, but I think only accidentally ; I did not see it attempt any of the tubes, and several of its frequent victim, *Osmia cærulescens*, were burrowing close by).

Odynerus (Symmorphus) gracilis, Brullé.—I have taken males in several localities round Woking this June, but no females.

Andrena ambigua, Perkins.—This recently described species seemed to be quite common at Stoke d'Abernon, near Cobham, on May 17th. I took many males and two females. The former were only distinguishable by their antennæ from the males of *A. varians*, the latter only by the puncturation of the clypeus from the females of *A. helvola*.

Andrena proxima, Kirby.—Two females at Swanage (June 4th

and 5th). I had received this species from the same locality some years ago, and was particularly anxious to secure some males of it. But, even at that period, the males were apparently over. I could not find a single specimen. Perhaps, like other *Andrenidæ*, the species may have appeared unusually early this season.

Brunswick, Woking:

July 7th, 1897.

Habits of Formica rufa.—I thought my note on *Formica rufa* on page 141 would have been understood by readers of this Magazine, but it appears, by the remarks on page 158, that I was mistaken, and fearing others may have doubt, I here observe that the whole community must have been at work many weeks before the 22nd April, the day on which I observed the winged females, seeing that the parents have first to be aroused from their lethargy caused by hibernation,—the eggs deposited, larvæ hatched and fed, and the pupa stage got through, before the said females could appear. They may have been out several days before, as the locality is nearly ten miles from my house.

My experience (about 45 years) with *F. rufa* does not agree with the writer's remarks on the periodical desertion of its nest. The nest from which my observations were made has been in existence for the past ten years to my knowledge, how much longer I cannot say; the extreme west side of it has been given up in consequence of receiving the beat of the weather, causing the material composing that part of the nest to decay; the extension, not separation, has taken a north-easterly direction. I should think that this hillock, old and new, would, at its base, measure forty feet in circumference. A new colony within a hundred yards, would, I feel certain, not be permitted by the old one. I visit the nest in my country rambles, sometimes three or four times in the year, and season after season I have found the inhabitants of the old colony strengthening their numbers by bringing home *F. rufa* from a new community that has been trying to start a separate habitation. Some twenty years ago (August, 1877) I knew of a similar colony which existed for several years; I believe the destruction in that instance was by the gamekeeper, who took all for feeding his young pheasants that were hatched at the breeding station*; there must be a cause for the periodical desertion of the nest, or supposed desertion, and I would suggest that the space between the old and new nest has been caused by the gamekeeper or bird-fancier turning over the contents of the nest in search of so called "ants eggs," in reality the pupæ, or by the same operation being performed by a bird of some sort; I have known a woodpecker consume a small colony, in winter, by daily visits.—G. C. BIGNELL, Stonehouse, Plymouth: July 14th, 1897.

* The material of which the nest was composed was removed with the ants, and a note by me on the same nest entitled, "*F. rufa* strengthening its nest by taking workers from other nests," will be found in Ent. Mo. Mag., vol. xvi, pp. 267—8 (May, 1880).—G. C. B.

Notes on Setina irrorella on the Cotteswolds.—This species is not, as many writers suppose, exclusively a littoral one, as for many years a specimen or two has occurred now and then at one or two localities at a high elevation on the Cotteswold Hills, in Gloucestershire. This season, I have been able to discover a little of its habits, and took a fine series of specimens, both male and female, which are very different in appearance to the common English forms as taken on the South Coast. The Gloucestershire specimens seem to be an intermediate variety between the coast form as it appears in our cabinets, and the Alpine one known as *Setina aurita*, which occurs at high elevations in different parts of Europe, and shows, I think, pretty conclusively, that what we call *S. irrorella*, *S. aurita*, and *S. ramosa* are only climatic variations of the same species. Most of the Gloucestershire specimens have all the colour and opacity of *aurita*, although the spots are not so large, while a few seem to approach nearer in colour and transparency to those taken on the South Coast. Where it occurs it seems to be confined to a very small area among high grass, and I could find no special lichen growing; the stones are a sort of coarse oolite. A few eggs which one of the females captured presented me with have hatched, but the larvæ do not seem to touch either of the lichens I have offered them.—GEORGE HARDING, 9, Belle Vue, Clifton: July 13th, 1897.

Acidalia contiguaria near Penmaenmawr.—A short visit to Penmaenmawr in North Wales last week produced a few *Acidalia contiguaria*. The species was only just getting well out, and consequently in fine condition. *Agrotis Ashworthii* was evidently not yet on the wing, as careful searches in places where some years I had found it to be not uncommon, revealed no trace of it. This was not surprising, as the weather was totally against mountain species, cold almost as January, and the wind often so violent one could hardly stand.—GEO. T. PORRITT, Crosland Hall, Huddersfield: July 12th, 1897.

Immunity of the Turkish oak (Quercus cerris) from the attacks of the larvæ of Tortrix viridana.—Last year, when most of the oaks in Windsor Forest and this neighbourhood generally were entirely denuded of their foliage by the ravages of the larvæ of *T. viridana*, so as to give them the appearance of mid-winter, I noticed one large oak tree (*Quercus cerris*) at Sunninghill in perfect leaf. It was particularly conspicuous, as there are a number of common oaks near it that were eaten quite bare. This season *T. viridana* is not nearly so plentiful, but still there are a good number on all the oaks except this one. The people about here have a saying that when the oaks loose their spring foliage from the attacks of caterpillars, that the second (or July) crop remains on the trees till Christmas; but this certainly was not the case last autumn, as I took note the trees shed their leaves at the usual time, and I must say I expected they would.—T. A. GERALD STRICKLAND, Ascot: July, 1897.

Fidonia piniaria at Glendalough.—I spent three days at Glendalough at Whitsuntide, but the weather was not favourable for collecting. I found *Fidonia piniaria*, which I had not taken before, abundantly, though I only secured males. It is not recorded in Birchall's list for any ascertained locality.—G. V. HART, Woodside, Howth: June 27th, 1897.

Re-occurrence of Porthesia chrysorrhæa, L., at Sheerness.—This moth has been so rare of late years, that I record with much pleasure the occurrence of its larvæ rather plentifully about a mile from Sheerness. Early in the year the winter nests of the young larvæ were fairly numerous on the top shoots of one hawthorn hedge, which, unfortunately, was clipped close in April, and the numbers of the insects greatly reduced thereby. A few nests escaped the general destruction, and the larvæ are just now full-fed and spinning up. This is the first time that I have seen *Porthesia chrysorrhæa* alive in any of its stages since 1872.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: June 23rd, 1897.

Osphyia bipunctata, F., &c., in Monks Wood.—On June 3rd Dr. Sharp, in company with Mr. Bateson and myself, went to look for *Osphyia bipunctata* in Monks Wood; the day, however, was unfavourable, and we only found two specimens, both females. It was perhaps too late in the season, but I believe that the insect must have been scarce this year, for I find that Mr. Pegler, of Retford, who went to look for it somewhat earlier, only found one male. Among other insects we found *Clytus mysticus* (commonly), *Tetrops præusta*, *Mordellistena abdominalis* (male and female), *Dermestes murinus*, *Nitidula rufipes*, *Achenium humile*, *Melandrya caraboides*, *Bruchus rufimanus* (beaten off hawthorn), *Haltica coryli*, and *Magdalinus pruni*. Among the Hemiptera-Homoptera, *Centrotus cornutus* was not uncommon, while the Heteroptera were represented by *Pentatoma hæmorrhoidale* and a colony of the very local *Piezostethus cursitans*, which occurred under the bark of a fallen tree; the best *Lepidoptera* seen were some good varieties of one or two species of *Hepialus* and *Macroglossa bombyliiformis*; we also found some rather good Aculeate Hymenoptera, which I believe have not yet been determined.—W. W. FOWLER, The School House, Lincoln: July 2nd, 1897.

The Cimex in the nests of domestic fowls.—Seeing a note regarding *Cimices* in fowls' nests by Mr. Douglas (p. 159 ante), I think perhaps the following information may be acceptable. The *Cimex* found in fowl roosts and pigeon boxes is the same both in France, Germany and England, and is the species described by Jenyns as *Acanthia columbaria*. It is a large brownish bug, about a quarter of an inch in length, and which I have figured in my work on The Parasitic Diseases of Poultry (Gurney and Jackson). Only once have I had any enquiry made regarding these parasites in England, where they are far from common, owing to the great improvement in recent years in poultry keeping. Railliet* refers to them and points out how they so torment the birds as to cause them to desert their eggs, which may be seen covered with the bugs' excrements. Should I receive amongst the numerous enquiries sent me any more of these *Cimices*, I shall send them to some expert, as mentioned in Mr. Douglas' note, in case the insect referred to by Railliet and others is not correctly named.—FRED. V. THEOBALD, Wye Court, Wye: July 12th, 1897.

Natural History Specimens and the Foreign Sample Post.—The agitation commenced by Lord Walsingham some years ago with a view to the transmission by sample post of specimens of Natural History from this country to places abroad, has at length been, to a certain extent, successful. At the Postal Congress recently held at Washington, permission was given to send specimens to countries within the Postal Union, but unfortunately the Convention giving effect to that decision will not come into operation until January 1st, 1899!—EDS.

* Sur une Punaise qui attaque les Poules (Bull. d. l. Soc. d. Méd. Vét. Pratique, 1890, p. 89).

Obituary.

Willem Roelofs.—Information has been received of the death of this well known Coleopterist while on a journey from The Hague to Brussels. He was Dutch by birth, but was for many years resident in Brussels, and was known as an artist of distinction, and especially as a landscape painter. He was one of the foundation Members of the Belgian Entomological Society (1856), and was its President in 1878-79. As a specialist he studied the *Curculionidæ*, and published many memoirs on the Family, mostly in the "Annales" of the Society above named.

Review.

HEMIPTERA GYMNOCRATA EUROPE, Tome V: by O. M. REUTER. 4to, pp. 392. 10 plates (8 coloured). Helsingfors. 1896.

The 5th Vol. of this important work brings it up to the end of the *Capsaria*, and is devoted entirely to the genera and species of that division; it also contains a systematic as well as an alphabetical index, the latter including all the synonyms of the genera and species, and concludes with a Supplement giving a conspectus of the genera, followed by a separate one of the species, both treated dichotomously. Vol. I, pp. 1-187, plates 1-8, dealt with the *Plagiognatharia*. Vol. II, pp. 1-312, plates 1-5, with the *Oncotylaria*, followed by additions and corrections to Vol. I. Vol. III, pp. 313-568, plates 1-5, with the *Nasocoraria*, *Cyllocoraria*, and *Dicypharia*, followed by addenda and corrigenda to Vols. I and II, and a "Dispositio Synonymica" of the species and genera contained in Vols. I to III, and of the Family divisions. Vol. IV, pp. 1-179, plates 1-6, contains the seven divisions from *Boopidocoraria* to *Pilophoraria*, and the synoptical tables connected therewith. In these five Volumes we are supplied with an exhaustive treatise on the subject; the descriptions are detailed, and are preceded by full synonymy, the synoptical tables are carefully worked out, and the structural and coloured plates are excellent. No work of like importance has been produced on the *Hemiptera*, and it is to be hoped that now the most difficult part of the work, i. e., the *Capsidæ*, is nearly completed, we shall soon have the entire work before us.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: June 10th, 1897.—Mr. R. ADKIN, F.E.S., President, in the Chair.

Mr. James N. Smith, of 28, Eastdown Park, Lewisham, was elected a Member.

Mr. Mansbridge exhibited a larva of *Tephrosia crepuscularia* beaten from yew, and a short series of imagines bred as a second brood from larvæ taken at the same place last year; he stated that the larvæ of *T. biundularia* from both Yorkshire and Epping were quite distinct from the larvæ of *T. crepuscularia* in marking and coloration. Mr. Tutt remarked that the young larvæ of both species were similar to the young larvæ of the *Ennomids*, in being black with more or less complete white rings, but said that such similarity did not necessarily show close relationship always. Mr.

Malcolm Burr, a few insects from the island of Socotra, and said that at a casual glance the Fauna seemed to represent a transition from the Palearctic to the Ethiopian Region. Mr. Lucas, Ichneumons which had emerged this year from last year's cocoons of *Zygana trifolii*, and also an earwig (*Chelisoches morio*) from Java, of which species two examples have recently been taken at Kew. In the discussion several curious instances of parasitism were noted. Mr. Tutt mentioned a parasite on the larvæ of *Melitæa Aurinia*, which had three separate emergences during life of its host. Mr. Hall said that a particular ichneumon was entirely confined to the young stage of *Cucullia verbasci*. Mr. Adkin, a series of both captured and bred specimens of *Teniocampa gothica* from Loch Loggan; the captured examples were largely *gothicina* forms, while the latter were very typical, although the ova were from females of the former variety.—HY. T. TURNER, *Hon. Secretary*.

LOCAL LISTS OF BRITISH LEPIDOPTERA.

BY CHAS. G. BARRETT, F.E.S.

In the course of an attempt to arrive at the actual distribution in these islands of some of the rather more obscure British species, I find myself more than previously impressed with the great value of carefully and accurately drawn up local lists. It is not only that the range of species well known to have but a local distribution requires to be accurately ascertained, but that species usually held to be everywhere abundant prove to be averse here and there to limited districts. One instance will illustrate this as well as a dozen. Few species are more generally common in this country than *Hadena oleracea*; a constant inhabitant of gardens, it also affects cultivated lands, fields, waysides, river sides, and ditches, even the margins of salt marshes, and other sub-saline spots, in greater or less abundance; yet in the seven or eight years during which I worked assiduously the Haslemere district—portions of Surrey, Sussex and Hants—I saw in all but two specimens of this species.

I have before me a paper of admirable intention—a plan, with rules, for a proposed “Fauna of the Counties of Kent, Surrey, Sussex, Hants and Berks”—of the Counties, that is, lying south of the Thames and most nearly approaching the Metropolis. This plan was brought forward by the South London Entomological Society in 1886, and apparently with considerable support and good hope of successful completion within a reasonable time. The subject was brought up again the following year by the President of that Society, but I regret to say that very little has been heard of it since. It was probably an undertaking too extensive, abstruse and elaborate to be carried out by the Members of that Society; but if even the *Lepidoptera* (of

which it is understood that a considerable list was compiled) had been published, it would have been, to me, a welcome and useful instalment. Further, it was, I believe, hoped that similar work would have been done for the Metropolitan Counties north of the Thames; and so far as Middlesex is concerned, a useful "preliminary" list was published by Mr. T. D. A. Cockerell in the "Entomologist," 1891—2; but so far as I know there is not in existence a collected record of the *Lepidoptera* of the London suburbs before the rapid disappearance of these insects, which has characterized the last few years, commenced. Yet Mr. S. T. Klein's catalogue of 130 species taken in thirty-six hours at Willesden, Middlesex, ought to have stimulated some one to follow up the theme in so rich a district.

For Harrow, in the same county, a list of 469 species has just been drawn up, with great care, by Messrs. J. L. Bonhote and N. C. Rothschild. Two or three of the species would seem to require confirmation by strong evidence, but, as a rule, great accuracy has evidently been attained, the unusual course being taken of furnishing the names of the captors for even the most abundant species. Intended, as it is, as a guide and sort of Manual for the boys of the Harrow School, much information is incorporated as to species *not* found in the district, and carefully drawn-up tables of the species in the larger genera are furnished; the list being also extended beyond the ordinary *Macro-Lepidoptera* to include the *Pyrallides*, *Crambina*, and *Pterophorina*. Whether the Harrow School collectors are such complete neophytes as to require an *English* name, however unsuitable, for every species, is a question which the authors, as "old boys," should be best able to answer.

For the county of Kent I know of no general catalogue. A list of over 500 species, extending to the *Phycitidæ*, occurring in the Rochester and Chatham districts, was contributed to the "Rochester Naturalist" by Mr. W. Chaney in the years 1884 to 1888. It is carefully drawn up, with notes of localities, dates and habits, and apparently very accurate.

Previously to this my old friend Dr. H. G. Knaggs had, in 1870, published a list of the "*Macro-Lepidoptera* of the neighbourhood of Folkestone" in the same county, for the Folkestone Natural History Society. This list, extending to over 400 species, is full of notes upon the habits and times of appearance of the species, and of great value. It also contains notices of a few *Micro-Lepidoptera*.

Besides these I have a MS. list by Mr. J. J. Walker of nearly 400 species found by him in the Isle of Sheppey, including, besides

the *Macro-Lepidoptera*, *Pyralites*, *Crambites* and *Pterophorina*, and enriched with notes of the habits of the species; and there is in the *Magazine of Natural History*, 1832, a list of 45 species of butterflies occurring in the neighbourhood of Dover, with full and numerous notes on their varieties, by the Rev. W. T. Bree, M.A., showing clearly that the richness of that district in butterfly aberrations was then fully as great as it is now.

For Sussex also I find no general list, but the county is rather more fully represented—

In the "Proceedings of the Eastbourne Natural History Society," 1885—6, is a list of the *Macro-Lepidoptera* of East Sussex, numbering about 600 species, with localities, by Mr. J. H. A. Jenner, drawn up with considerable care and general accuracy.

A similar list, but including notices of the habits of many of the species, and extending to the *Tineina*, for West Sussex, was drawn up some years ago by Mr. W. H. B. Fletcher, M.A., and printed for him at Bognor, but without date. This extends to between 600 and 700 species, and is more especially complete in the smaller families.

For the district round Hastings and St. Leonard's the Rev. E. N. Bloomfield, M.A., has recorded the results of his own collecting and that of friends for many years, producing a catalogue of upwards of 1000 species. This, as a matter of course, includes a very large number of *Micro-Lepidoptera*, and has been drawn up with extreme care as to accuracy, but does not furnish any further information except as to the relative rarity or commonness of the species. It is contained in the "Natural History of Hastings and St. Leonard's and the vicinity," 1878, and two Supplements, 1883 and 1888, and published by the Hastings and St. Leonard's Philosophical and Historical Society.

I cannot find that any general list exists anywhere for either of the rich counties of Surrey and Hants. This is the more astonishing, since the latter county contains those two localities celebrated above all others, the New Forest and the Isle of Wight, while the former is that probably most frequented by London entomologists. I have my own list of something like 1100 species found in the Haslemere district (which extends into Surrey, Hants and Sussex), but otherwise am obliged to depend for those two counties upon the multitudes of captures recorded in this and other Magazines.

Dorsetshire is better provided. It seems that a first edition of the "*Lepidoptera* of Dorsetshire" was published in 1886 by the Dorset Field Club; this I have not seen. Mr. C. W. Dale's second edition of the same, brought out by himself, reaches the dimensions of

a small book. It records about 1450 species, a number unprecedented in any other county, and though in so large a number it is hardly possible but that inaccuracies exist, it is generally reliable and of great value, containing, as it does, not only notes of localities and occasionally of habits of species, but also of the early captures of Mr. John Curtis and the author's father, Mr. J. C. Dale, whose vast collection was the resort and treasury of some of our earlier authors.

For that portion of Dorsetshire known as the Isle of Purbeck a most accurate and reliable list of over 900 species (extending like the last through the *Tineidæ*) by Mr. E. R. Bankes and the Rev. C. R. Digby, is published, with a plate, in the "Proceedings of the Dorset Natural History and Antiquarian Field Club," 1885. It contains notices of the food as well as of the habits and localities of very many of the species, derived from the personal experience of the authors. Its value is enhanced by a Supplement of 156 species by the same authors, published through the same medium in 1889, and with it a fine plate of some of the more remarkable species.

Devon also has received a fair amount of attention. In 1864 (and doubtless in previous years) a "Catalogue of the *Lepidoptera* of Devon and Cornwall," from the pen of Mr. J. J. Reading, was published in the "Transactions of the Plymouth Institution." The only portion in my possession is that of the "*Noctuina*," amounting to 214 species, and furnishing much information as to localities. From the introduction it appears that the *Rhopalocera*, and also the *Sphingina* and *Bombycina*, had previously been catalogued; but I find no indication of any list of the *Geometrina* or following groups.

In 1878 a far more complete and elaborate list, comprising 1100 species, with abundance of useful observations, forming a good sized volume, compiled by Mr. E. Parfitt, was published in the "Transactions of the Devonshire Association for the Advancement of Science." The author even extends his remarks to fossil insects, though, so far as Devon is concerned, these are not Lepidopterous.

I have further been obliged by Mr. J. Basden Smith, of Plymouth, with a marked list of about 350 species of *Macro-Lepidoptera* found in that district; and by the late Major John Still, with the results of his researches on Dartmoor and on the south coast of the county.

For Cornwall and the Scilly Isles a list of nearly 800 species, including the *Tineidæ*, was published in 1893—4 in the "Transactions of the Penzance Natural History and Antiquarian Society." It contains information of interest about many of the species, and appears to be generally accurate, though there are some species included which seem to require confirmation.

For Somerset and Gloucestershire we have a very full and complete "Catalogue of the *Lepidoptera* of the Bristol district," by Mr. Alfred E. Hudd, published in the "Proceedings of the Bristol Naturalists' Society," 1877—1884. It extends to 1300 species, with plentiful notices of habits, localities and food-plants; and is drawn up with considerable accuracy and close research. Probably few local lists are more complete than this, since Bristol was for many years a grand nucleus of entomological work, and Mr. Hudd availed himself of the results of many years' keen collecting by well known residents.

In the case of Gloucestershire a further valuable contribution has been made by Mr. C. Granville Clutterbuck in a MS. list of the *Noctua* of the district lying round the city of Gloucester, with notes of their habits. This is, I hope, only an instalment of a more complete list for that district.

For the county of Wilts I find no collected list, and even isolated notices of captures are few, yet the county contains Marlborough, Newbury and Savernake Forest.

For the county of Berks I find no completed list, but in the "Entomological Magazine," 1834, is a notice of 253 species taken, mainly at light, at Burghfield, Reading, by the Rev. C. S. Bird, which contains a few useful notes; and for the portion situated within ten miles of Reading, Mr. William Holland has furnished a very full and accurate MS. Catalogue of 1085 species, with numerous localities and notes. The ten mile radius, however, includes a small part of Hants and an extensive range of Oxfordshire.

Beyond this I find no Oxfordshire list, except a small Catalogue of 90 species, with useful notes, of those occurring in the vicinity of Aylesbury, published in the "Zoologist," 1854, by the Rev. Joseph Greene; nor does there appear to be any for the rich county of Buckingham.

For Hertfordshire a good deal has been done by Mr. J. Hartley Durrant in the "Transactions of the Hertfordshire Natural History Society," by his "Contributions to the Knowledge of the Entomological Fauna of Hertfordshire," 1881, in which a large number of notices by other entomologists and from the older works on the subject are added to the results of his own collecting, but unfortunately without bringing all into a consecutive list; and previously, in 1885, by a "List of *Lepidoptera* observed in the neighbourhood of Hitchin and Knebworth, Herts," which simply furnishes the names of the species observed.

Huntingdonshire appears to possess no separate local list, but it is included with Cambridgeshire, and portions of Northamptonshire,

Suffolk, and even Norfolk, in the "List of Fenland *Lepidoptera*," compiled by the late Mr. James Balding, and published in the work of Mr. S. B. J. Skertchly, entitled, "The Fenland, past and present." This list, which extends through the *Tineidæ*, contains 1300 species, with copious notes of localities and other information, and is tolerably complete and very reliable, containing the results of the working of many excellent entomologists. With it is a valuable introduction treating of the more rare and local species, and also drawing attention to those which are perplexingly *absent*.

The Rev. W. Bree's interesting list of 45 species of butterflies then to be found about Polebrook, Northamptonshire, published in the "Zoologist," 1852, must not be overlooked, giving as it does much information about species no longer found there.

Strange to say there appears to be no collected list for Essex, the county in which Epping Forest is situated, and in which Mr. H. Doubleday resided and worked during a long life; though in the "Magazine of Natural History," 1837, is a Catalogue by Mr. Edward H. Burnell of 200 species found by him in the neighbourhood of Witham, which is the more interesting from its noting the presence of species which have since disappeared from the east of England. A list of the butterflies of the county, with abundant localities and general information, by Mr. E. A. Fitch, was published in the "Essex Naturalist" in 1891; and the author, who is admirably qualified for the task, promised me details of further groups; but for the performance I am still waiting!

A list of 300 species collected on the borders of this county and Suffolk by Mr. W. Gaze (an excellent and most diligent entomologist fifty years ago) was published in the "Entomologist," 1842, but it is only a list of names.

Suffolk. In the "Naturalist," 1857—8, is an admirable list of the Butterflies, *Sphinges*, *Bombyces*, and a small portion of the *Noctuæ* of Suffolk, by the Rev. J. Greene, assisted by the Rev. H. H. Crewe and Mr. C. R. Bree. Unfortunately it came to an untimely end in company with the Magazine in which it appeared. From the abundance of information respecting larvæ and pupæ furnished, the remainder of the MS., if it could be found, would be well worthy of publication, even after the lapse of forty years.

A far more complete list is the "*Lepidoptera* of Suffolk," by the Rev. E. N. Bloomfield, M.A., published in 1890. It extends to the end of the *Tineidæ*, and comprises between 1100 and 1200 species. The author has taken the utmost possible pains to secure accuracy, and has furnished much information as to localities and habits.

Norfolk. The "Sketch of the Natural History of Yarmouth," by C. J. and J. Paget, published at Yarmouth in 1834, contains, besides Catalogues of the birds, insects of various other Orders, and plants, a list of 220 *Lepidoptera*, the majority found in Norfolk; also notes. My own list, published in the "Transactions of the Norfolk and Norwich Naturalists' Society," 1874 and 1884, contains 1350 species, with localities and other information. More recently I have been obliged by the Rev. C. T. Cruttwell with a valuable MS. list of his captures in the south of the county, especially among the *Tineidæ*; and by Dr. Carlier, of Edinburgh, with a similar list of the *Macro-Lepidoptera* noticed by him around Norwich.

For Herefordshire the only list with which I am acquainted is that by Mr. Thos. Hutchinson, published in the "Transactions of the Herefordshire Field Club." It comprises nearly 1300 species, mainly the result of many years' work by Mrs. Hutchinson and her family in the Leominster district, and of Dr. John H. Wood, in that of Ledbury and elsewhere, but unfortunately it is merely a list of names, and furnishes scarcely any other information.

In the "Handbook of Birmingham," an article appeared from the pen of Mr. W. G. Blatch upon the *Lepidoptera* of that district, comprising part of the counties of Warwick, Worcester, Stafford, and even small portions of Salop and Nottinghamshire, but that work being out of print, and not readily obtainable for constant reference, Mr. Colbran J. Wainwright has obliged me with a MS. list for that district of 300 species of *Sphinges*, *Bombyces*, and *Noctuæ*, to be followed by further instalments when required. This is very carefully drawn up, and furnished with numerous localities.

Except as touched in this list, I find no catalogue of the *Lepidoptera* of Worcestershire, Nottinghamshire, or Salop, nor do I know of any for Bedfordshire or Northamptonshire.

The "*Lepidoptera* of Burton-on-Trent and neighbourhood," by Messrs. P. B. Mason, J.P., J. T. Harris, and others, published in the "Transactions of the Burton-on-Trent Natural History and Archaeological Society," 1885, is a valuable contribution to our knowledge of the species inhabiting Leicestershire and portions of Derbyshire and Staffordshire. It includes the *Micro-Lepidoptera*, comprises 1000 species, and furnishes very numerous localities. Unfortunately, it is a matter of some research to ascertain to which county some of these localities belong.

In 1891, a list of the *Macro-Lepidoptera* of Leicestershire, by Messrs. F. Bouskell and C. B. Headly, was published by the Leicester

Literary and Philosophical Society. It contains much information as to localities, but is unfortunately marred by the inclusion of a number of species obviously recorded in error, and by an unusual number of printer's blunders.

For North Staffordshire, the Rev. T. W. Daltry has obliged me with a MS. list of the *Bombyces*, *Noctuæ*, and *Geometræ* of that district, comprising 360 species—a very useful list, with localities, and much information.

For Derbyshire, there is in the "Entomologist," 1895, a list of 440 species of *Macro-Lepidoptera*, by Mr. F. W. G. Payne, but a large portion of the information therein coincides with that contained in the Burton-on-Trent list already noticed.

The only list for Lincolnshire which has come under my notice is that in the "Entomologist," 1894, by Mr. W. D. Carr; it includes only the butterflies, *Sphinges*, *Bombyces*, and *Noctuæ*, amounting to 213 species, but seems pretty accurate, and is enriched with notes on the habits of many of the species.

The "Lepidopterous fauna of Lancashire and Cheshire," by Dr. John W. Ellis, published originally in the "Naturalist," but brought out as a neat volume in 1890, is the principal and by far the best Catalogue of the *Lepidoptera* of these two counties. It combines with more modern information the details of one or two small local lists to which I have not access, and furnishes localities, and in some cases other useful information regarding 1350 species, including the *Tineidæ*. Care is also taken to show details for each county separately, and a short account of the geological formation of the district is given in the introduction. Included in it is doubtless much of the information furnished in 1855 in a "List of the Lepidopterous Insects of the district around Liverpool," by Mr. C. S. Gregson, published in the "Transactions of the Lancashire and Cheshire Historical Society."

Yorkshire is also represented by a very neat volume, the "List of Yorkshire *Lepidoptera*," by Mr. G. T. Porritt, F.L.S., published in the "Transactions of the Yorkshire Naturalists' Union," 1883. It records 1340 species, including *Tineidæ*, and along with numerous and widespread localities in that great county, furnishes great numbers of references and much other useful information. I do not know any local lists more complete, or more neatly and accurately got up than this, and that for Lancashire and Cheshire. The only other Yorkshire list known to me is that of 460 species, compiled by Mr. Robert Cook, and published in the "Entomologist," 1842. This includes many *Micro-Lepidoptera*, but gives only their names.

A "Catalogue of the *Lepidoptera* of Northumberland and Durham" was published in 1858, by Mr. George Wailes; but it only extended to the butterflies and *Sphingidæ*, of which he recorded 53 species, furnishing references to many of the older authors, and extremely copious notes. That it should never have been extended to other groups has always been a ground for regret. Now I am glad to find that Mr. J. E. Robson is drawing up a complete Catalogue, which, in his hands, is certain to prove of great value. For present use he has obliged me with the portion of it which refers to the *Noctuæ*, with promise of further help in the future.

For Westmoreland I find no collected list.

In Cumberland Mr. G. B. Routledge has furnished a MS. list of 400 species observed within a few miles of Carlisle; and I have had the opportunity of noting down particulars of a large collection made in the same county by Mr. G. Dawson. There is also in the "Entomologists' Record," vol. vi, a list of nearly 400 species, found near Keswick by Mr. H. A. Beadle, which seems to be carefully drawn up.

The poverty of records in Wales is most extraordinary. For thirty or forty years past the Liverpool entomologists (at least) have been assiduously working in North Wales, and no *collected* record of their work, so far as I know, exists! In South Wales there are in this Magazine and elsewhere short lists of captures by Sir J. T. D. Llewelyn, Capt. Robertson, Mr. Holland, and others, but I know of nothing aspiring to be called a Catalogue, unless I claim that title for my own meagre MS. list of 750 species taken in South Pembrokeshire, probably the poorest entomological district in the Principality.

In Scotland the state of things is very different. In the "Naturalist," 1851-2, is a list of about 380 species found in the West of Scotland, with copious notes, by Mr. John Gray, which is carefully worked out, and, with the exception of one or two evident errors, is I think quite reliable; and still earlier, in the "Annals and Magazine of Nat. Hist., 1839, in the "Fauna of Twizell," by Mr. P. J. Selby, is a list of 360 species taken in Berwickshire. In 1871, the late Dr. F. Buchanan White brought out "Fauna Perthensis: Part i, *Lepidoptera*," published by the "Perthshire Society of Natural Science," containing a list of 550 species, including *Pyrulides*, *Crambites*, and a few *Tortrices*: a valuable list of the species found in that richest of Scottish counties—Perthshire—very reliable, and enriched with much useful information.

Immediately after this, 1872 to 1879, he brought out in the

"Scottish Naturalist" his "*Insecta Scotica—Lepidoptera*:" a list of the *Macro-Lepidoptera* of Scotland, amounting to nearly 500 species, showing their distribution into thirteen districts; these being so arranged as to divide the country in accordance with its natural river-basins. Much other information is given as to food and time of appearance of the larvæ, and dates and habits of the perfect insects, with their natural range of distribution. Lest this should be insufficient, he further sent me, before his death, a MS. list of the species, corrected to date, and indicating more distinctly their distribution in Scotland.

Previously to this, a list of 480 species, under the title of "The Lepidopterous insects of Midlothian," by Dr. W. H. Lowe and Mr. R. F. Logan, was published in the "Naturalist," 1852; and in the "Zoologist," 1861, a list of 384 species "found within the province of Moray," by the Rev. George Gordon, M.A. Both these, so far as they relate to *Macro-Lepidoptera*, are incorporated with Dr. White's general list; but as both contain a considerable number of *Micro-Lepidoptera* as well, they are still valuable.

In 1879, the late Sir Thomas Moncrieffe published, in the "Scottish Naturalist," a list extending to 600 species, of the *Lepidoptera* inhabiting an area of one mile round his own house at Moncrieffe Hill, Perthshire—a very useful and valuable paper, including all groups of the *Lepidoptera*, containing an immense amount of information, and even dealing largely with specific and local variation.

For the Clyde Valley I have a MS. list, undated, but at least thirty years old, by Dr. T. A. Chapman, of species taken by himself, his late father, Mr. Thomas Chapman, and a few friends. This extends to 560 species, and does not include *Tineidæ*; it is a useful and reliable list, with many notes. More recently (1876), in "Notes on the Fauna and Flora of the West of Scotland," Mr. J. J. King furnished a list which extends to the *Tineidæ*, and includes 680 species, but only refers to a portion of the same district lying on the north side of the Clyde. It is carefully drawn up, and gives numerous localities.

For Roxburghshire a list of between 300 and 400 species has been published by Mr. Adam Elliot in the Proceedings of the Berwickshire Naturalists' Club, with notes on a few of the insects, and he since obliged me with the names of such additional species as occurred. Moreover, he has just published, in the "Annals of Natural History," a revised list of species captured by himself, considerable number of *Micro-Lepidoptera* are added.

In 1892 Dr. E. W. Carlier contributed to the "Annals of Scottish Natural History" a list of over 100 species found at Balerno, Midlothian, with numerous notes. This does not extend to the *Micro-Lepidoptera*. The latter are, however, included, and very fully represented, in "Notes on *Lepidoptera* collected in the Edinburgh district" by Mr. W. Evans, F.R.S.E., published in the same periodical in the present year. The writer, in the *Macro-Lepidoptera*, mentions only the more important and scarcer species, but goes very thoroughly into the later groups, furnishing the results of his own assiduous collecting of them for the last two or three years, supplying localities, notes, and indeed almost all that we know about the *Micro-Lepidoptera* of the Forth district.

In vol. vii of this Magazine is a paper by Dr. F. Buchanan White upon the *Lepidoptera* of Strathglass, wherein he recorded about 200 species; but with this exception, I find no connected list of species for Inverness-shire, Aberdeenshire, Kincardineshire, Argyleshire, or Sutherlandshire, although all these are well known and rich collecting districts.

It is quite otherwise with the Isles, notwithstanding that their species are, apparently, far less numerous. In the "Entomologist," 1888, are lists of 146 species in the Hebrides, 168 in the Orkneys, and 96 in the Shetland Isles; and although these are mainly the results of working in one or two islands in each group, an extension of the investigation to other islands does not appear greatly to increase the number of species; but thirteen additions are made to the Shetland List by Messrs. J. J. F. X. King, Percy M. Bright, and Wm. Reid, in their record of "Ten weeks' collecting in Unst" in this Magazine for January, 1896.

For Ireland the first collected list seems to have been that by the Rev. J. Greene and the Rev. A. R. Hogan, published about 1856 by the "Dublin University Zoological and Botanical Association;" this, which I have not seen, is said to have contained 636 species.

These were further included, with numerous additions, in the "*Lepidoptera* of Ireland," by the late Mr. Edwin Birchall, published in this Magazine for 1866-7. This extended to 1000 species, including the *Tineidæ*, with numerous interesting notes, but also some apparently erroneous entries. After his spending many years in verifying or correcting these doubtful entries, and in extensive collecting in various previously unworked portions of Ireland, a very full Catalogue is at the present time in course of publication by Mr. W. F. de V. Kane, in the "Entomologist." In the *Macro-Lepidoptera*, now com-

pleted, is a large amount of valuable information upon localities and the variation of species, but it still contains records of species which require confirmation. These seem to be derived from a considerable list of species observed at Clonbrock, Co. Galway, by the Hon. R. E. Dillon, published in the same magazine. A consideration of the species therein included, as compared with the Lepidopterous fauna of the rest of Ireland, seems to lead to the conclusion that groups of rare or local species must have transferred themselves from various spots in the South of England, or of the continent, to that one favoured, far west locality; and that they must have, in a considerable degree, altered their habits and modes of life by the way.

In the "Irish Naturalist," 1893, is a list of 260 species of *Macro-Lepidoptera* taken in the neighbourhood of Londonderry, drawn up by Mr. D. C. Campbell; and he, with his brother and Mr. J. N. Milne, have furnished some information as to the *Micros* of that district; the same has been done by the Rev. W. F. Johnson and Mr. C. A. Watts for Armagh, Donegal, and Belfast; at the other end of the country the Rev. W. W. Flemyng has supplied much information for Waterford; and intermediately the Rev. J. Bristowe and Mr. G. V. Hart for Dublin and the surrounding districts. I think that the only other important contribution to our knowledge of Irish *Lepidoptera* is Col. C. E. Partridge's record in this Magazine for 1893 and 1895, of his own and Capt. E. W. Browne's captures at Enniskillen.

It would be absurd to close this slight sketch of our progress in local knowledge of our *Lepidoptera* without referring to the comprehensive Catalogue by Mr. J. Jenner Fust, published in the "Transactions of the Entomological Society of London," 1868, in which the distribution was given of all the then known species inhabiting Great Britain and Ireland, so far as had then been investigated. This paper, which is of a most elaborate character, and must have cost an enormous amount of work, shows the distribution of each species as to, in the first place provinces, and in the second sub-provinces, in the manner adopted with reference to wild flowers in the "Cybele Britannica." The whole of the British Isles are therein divided into eighteen provinces, and thirty-eight sub-provinces, and to these the species of *Lepidoptera* are assigned by Mr. Fust in the two tables, to which also he adds a summary. By the nature of these lists or tables localities and general information are excluded, and the authorities are only generally furnished in the introductions.

(To be continued).

HINTS ON REARING *BOMBYX RUBI*.

BY JOHN E. ROBSON, F.E.S.

A difficulty has always been experienced in rearing *Bombyx rubi* from its earlier stages, because the larvæ, which are full fed in autumn, cannot then be induced to pupate, and can only be hibernated by a very full exposure to the changes of the weather. This may appear a simple matter, but it does not prove so easy of accomplishment, for, besides exposure to the severity of the winter, they also require to experience the more genial effects of the direct rays of the sun in spring. To combine these, yet to confine the larvæ, generally proves so difficult that very few ever reach the pupal state.

On our sandhills, where the larvæ swarm in autumn, they retire below the surface when full-fed, and, remaining there during the more severe weather, emerge in spring to bask in the rays of the morning sun, retiring again after mid-day as it declines. They do not go far down, and are always susceptible to warmth after the new year. I once noticed them out so early as January 10th, but that is quite an exceptional date, as the day was unusually warm for the time of year. Generally speaking March is well in before they appear in any numbers, but any really warm day may bring them out.

I have had occasion to cross a portion of our sandhills at least twice a week during the greater part of this year. This has given me an opportunity of observing them in their natural habitat, and also of obtaining a large number to rear at home. I saw them first on February 10th; it was exceptionally fine for the time of year, with a west wind and hot sun. I picked up about 50 as I crossed—a walk of about half a mile. I could easily have obtained very many more by walking to and fro. On the 13th, an equally warm day, they were just as numerous, and I took 20 or 30 more.

I had found long ago, that when a number of them were enclosed in a breeding cage with moss to spin in, one disturbed another and prevented them making their cocoons, only a small proportion reaching maturity. To prevent this I had placed each larva in a separate chip box (1½ oz. size). In these they spun up readily, but there was always a proportion of circular cocoons, in which the larva had not length to straighten itself out before pupating, resulting in a crippled pupa that never produced an imago. Attributing it to the shape of the box, I now enclosed each in a separate paper box two inches square. These were numbered and dated and placed on the shelf over the kitchen fire. Most of the earliest batch had spun their cocoons by the 14th, and by February 20th they all had done so.

I was over the ground again on February 14th, but the weather had changed since the preceding day, when they were out in abundance. A cold easterly wind was blowing now, and not a solitary larva of *B. rubi* could be found. This cold weather continued with more or less severity until March 21st, *rubi* remaining in close concealment all the time. On this day the wind veered round to the west, the sun shone brightly, and the temperature was high, but I had not the opportunity of noting the degree; *rubi* larvæ were out in numbers far exceeding anything I had seen before. Several collectors were on the ground, and to my knowledge more than a thousand larvæ were taken off this short range of sandhills. Yet no perceptible difference appeared in the numbers about, notwithstanding so many being taken. I took a considerable number, and treated them exactly as the others, isolating them, and placing the boxes, all numbered and dated, in the same warm situation. These commenced to spin within 24 hours, but the larvæ continued to crawl about out of doors for another fortnight, though, after the 25th, their numbers diminished very rapidly. The last day on which I noticed them was April 11th, when I found nine.

On April 4th an imago from the first batch appeared—a female. As I would not disturb them too much, the following particulars are of periods commencing when the larvæ were taken, and ending with the appearance of the imagines. I cannot give the date of pupation. The first batches (those taken on February 10th and 13th) produced imagines in an average of $58\frac{1}{2}$ days, the longest period being 64 days, the shortest 53. Those found six to nine weeks later (March 21st to April 11th) only took an average of 28 days, the longest period being 35 days, the shortest 21. In all cases the first to appear were females, the males emerging three or four days later.

It was necessary to open the boxes and remove the cocoons before the inmates emerged. I again found a number of perfectly circular cocoons. The chip boxes were two inches across, not a great space for so large a larva. In the paper boxes there was a length of three inches from corner to corner, which was more than enough. It seemed strange, that with abundance of space, they should spin these circular cocoons (one of which was only three quarters of an inch in diameter), in which they could not straighten themselves out. In two cases the larvæ had not changed when I opened the boxes; I therefore tore the cocoon open, and found the contracted larvæ curved, back outwards, and not able to straighten out, but when they cast the larval skins the pupæ were all right, and both produced perfect imagines. In all the others the pupæ were bent round, and more or less imperfect on the

under-side. One only produced an imago ; it was hopelessly deformed, and unable even to use its legs. One pupa in an ordinary cocoon was exceedingly small, and it produced the smallest imago (a male) that I have yet seen ; it is not more than quarter the size of a fully developed moth, and bore evidence of starvation in having the wings almost devoid of scales. The pale lines too, which form the edge of the band, are in close contact for their entire length, so that in lieu of a band there is merely a double ochreous line. Other two males, both undersized, had these lines in contact on the inner margin and partly across, three or four had them closely approximating, with a portion of the area (usually darker than the rest of the wing) filled up with the same pale ochreous scales. The curves of these marginal lines vary very much, and are not always alike on both wings. There is, as might be expected, considerable diversity in shade, but all are cold brown, never approaching the richer red-brown of southern examples.

There is rather less variety in the markings of the females, but they are of the same character. The curves of the margin of the band differing, and sometimes approaching each other on the inner margin. In one specimen, with a band of average width, the space between the margins is all pale whitish-grey. No corresponding specimen appears among the males, where the band is only pale when narrow. Some of the females have a tendency towards the brown hue of the males, and these are all large and evidently well nurtured specimens.

The most interesting point is that the earlier found larvæ, though pupating almost as quickly as those found later, were so much longer in producing the perfect insect. All were exposed to the same conditions after capture, and I would have expected them to remain about the same time in pupa ; yet the earlier found larvæ required from 53 to 64 days to produce the imago, and the later ones only 21 to 35 days, some of them being, therefore, three times as long in pupa as others. May we deduce from this a reason why they cannot be forced through in autumn. Though perfectly full-fed, they are evidently not mature, and require eight or nine months for the slow internal changes necessary. The autumn larvæ will die rather than spin their cocoons. Four or five months later they will spin and pupate, but the needed time is taken in the pupal state. A somewhat parallel case may be cited in *Lycæna Alsus*, which remains nine or ten months as a full-fed larva.

FOUR NEW SPECIES OF *ARHOPALA*.

BY G. T. BETHUNE-BAKER, F.L.S.

ARHOPALA SANGIRA, n. sp.

♂. *Upper-side*: primaries exceedingly pale silvery-blue, almost as pale as *argentea*, Stgr., bluer towards the outer margins, with a subtriangular apical patch of rich, deep, dark purple; costa very narrowly black, outer margin broadly black, decreasing in width very rapidly from the second median nervule. Fringes black, tipped with white from the second median nervule. Secondaries very pale, beautiful slightly silvery-blue, losing the silvery tint beyond the extremity of the cell. Costa greyish to the subcostal nervule, outer margin very finely black. Tail, at the end of the third median nervule, rather long, black, tipped with white, on each side of which is a small blackish marginal spot. Fringes black tipped with white, abdominal fold whitish. *Under-side* dark greyish-brown, with all the spots and fasciae broadly marked out with white, as follows: primaries, a fine short white line from base to the second cell spot, three large increasing cell spots, over the second and third are smaller spots up to the costa, all these spots are bordered broadly laterally with white, so as to appear more fasciae than spots, the transverse fascia very irregular, the first small spot beginning very near the third cell spot, the second shifted outwards, third and fourth confluent, shifted still further out, fifth right inwards, its outer lateral edging being almost confluent with the inner edging of the fourth spot, and its inner edging being practically confluent with the outer edge of the third cell spot, sixth spot shifted yet further in, with its inner white border projected right inwards to the second cell spot; submarginal fascia continuous, very distinct from the costa to the inner margin, rather broadly edged with white, and following the line exactly of the wing margin; outer margin bordered with white, very finely intersected by the nervules; subdiscoidal area with a whitish patch in the middle; submedian area white, with a brown central spot. Secondaries with a short white streak over the costal vein, extending about a third along the costa. Four basal spots, none completely encircled, the upper three touching each other, the fourth shifted inwards, being hook-shaped, and touching the last spot of the transverse fascia, these are followed by three spots below each other across the centre of the cell, cell closed by a large quadrate spot, laterally edged, below which the usual one is marked by a long white dash extending nearly to the transverse fascia, which is very irregular, the first spot having its inner edge confluent with that of the second spot, which is also confluent with the outer edge of the quadrate cell spot, second spot larger, with its outer edge shifted outwards, third and fourth spots shifted right outwards and confluent, the inner edge touching the outer edge of the previous spot, fifth shifted inwards, sixth slightly inwards, but inclined rather outwards, seventh angular spot shifted right inwards, quite dislocated, and confluent with the eighth long spot, which forms as it were a long extension of it; submarginal line distinct, broadly bordered with white; marginal line white; lobe spot and on each side of tail velvety-black, the middle one being almost obliterated by the silvery-blue metallic scales, the other two edged above by the same also.

Expanse, ♂, 44 mm.

Sangir.

This lovely little species will come between *aronya*, Feld., and *argentea*, Stgr., but may be known from either by the very distinct colouration of the upper surface, which is very close indeed to that of *Theba*, Hew., but is much more silvery and with very much less purple.

ARHOPALA BRAHMA, *n. sp.*

♂. *Upper-side*: both wings rich purple, much the same colour as *Hercules*, Hew., but not lustrous, though in some lights there is a slight lustre visible; costa of primaries with an exceedingly fine brown marginal line; fringes brown, with no anteciliary line at all to either primaries or secondaries; costa of secondaries rather broadly brown, and abdominal fold brown. *Under-side*: both wings very dull greyish-brown, with all the markings inclined to obsolescence, specially in the primaries; the only marking really visible in the primaries is the transverse band, which is just discernible, it is apparently composed of five spots, the first three placed in a slight arc, the fourth and fifth directly below each other and shifted very slightly inwards. In the secondaries the four basal spots are present, the upper two being barely discernible, the three below each other across the cell are fairly distinct, as also is that closing the cell, below which is a trace of a small triangular one; transverse band composed of eight catenulated spots, the third being shifted right outwards, just touching the outer edge of the second, fourth shifted slightly outwards, fifth and sixth with a very slight outward inclination, seventh angular spot dislocated right inwards and touching the eighth spot; there is a slight trace of a submarginal fascia, a very fine pale ante-marginal line. Expanse, 42 mm.

♀. Both wings bluish-purple. Primaries broadly blackish-brown to near end of cell, where this colour suddenly widens and forms a large subtriangular blackish angular patch; outer margin broadish, decreasing rapidly from the second median nervule to the anal angle. Secondaries with broad brown costa and narrow brown outer margin, increasing slightly as it nears the anal angle; abdominal fold greyish. The only ♀ before me has been stained to a very dull violet, but nearly a third of the left secondary is of the original colour, and I have taken this as the ground-colour of the whole wing. There is no doubt as to the discolouration. *Under-surface* precisely as in the male, but all the markings larger and fairly distinct, and in the primaries the three increasing cell spots and that in the lower median angle are discernible, all the spots are light edged, those of the primaries are more obscure than the secondaries. Expanse, 45 mm.

Hab.: Perak.

This species will come next to *hypomuta*, Hew.; it can, however, be recognised by its larger size and the brighter purple of the upper surface, also by the obsolescence of markings beneath, the transverse bands being different in shape, and by the lack of any metallic scales at the anal angle of the secondaries.

ARHOPALA IJANENSIS, *n. sp.*

♂. *Upper-side*: both wings pale azure blue, slightly lustrous; primaries with the costa broadly blackish almost to the cell margin, and increasing in width towards

ON THE STRIDULATORY ORGANS OF *Trox*.

BY DR. D. SHARP, F.R.S.

Probably almost every one who has handled a living specimen belonging to this extensive genus is aware of its power of producing sound ; a sound which can be felt when the insect is handled, as well as heard. Hitherto, the way in which the sound is produced has not been made out. Lacordaire (*Genera des Coléoptères*, iii, p. 151) says, "all the species, when seized, contract the head and legs and produce a sound caused by the rubbing of the abdomen against the elytra." Harold says, in his *Monograph of the genus* (*Col. Hefte*, ix, p. 13), "the upwards directed portions of the sides of the ventral rings, which are covered by the elytra, are very finely granulated, and by rubbing against the inner surface of the elytra produce the well-known chirping which the creatures emit when handled." Leconte and Horn say (*Classif. N. Amer. Col.*, p. 247), "the genus *Trox* possesses a distinct stridulating organ ; it is an elliptical plate with pearly reflections occupying the upper part of the extreme face of the ascending portion of the first ventral segment, and is covered by the elytra ; on the inner surface of the elytra, near the margin, about opposite the metathorax, is an oval, smooth, polished space, which has probably some connection with the stridulating organ." On examining these structures I was struck with the fact that they are totally different in their sculpture from all the other stridulating organs that have been detected in beetles ; and at the same time they appeared to me very ill-adapted to perform the function ascribed to them. I accordingly made a careful examination of two different species of *Trox*, and was soon rewarded by finding the usual form of Coleopterous stridulating organ, though the parts are different in their positions from those of any other beetles, so far as we know at present.

The elytra of *Trox* are so closely fitted together that they can withstand great pressure. If taken off and examined it is found that there is on the apical half of each, quite close to the suture, a fine raised carina, the surface of which is beautifully striated. On scratching this surface with a knife-edge, sound such as is characteristic of *Trox* is heard. In order to scratch these striæ there exist on the penultimate dorsal segment two fine, sharply raised, ridges. One of them is placed on the anterior margin of the segment, and in a large North American species (which I am unable to name, sent me from Arizona by Mr. Wickham) attains great perfection ; the second ridge is placed just in front of the posterior margin of the segment. In

the South African *Trox penicillatus** the structures are similarly situate, though the shape of the penultimate dorsal plate is rather widely different.

These structures are beautifully developed, and have no doubt escaped notice because the striate ridges are very slender, so that their characteristic sculpture will not be seen unless looked for.

As regards the structure alluded to by Leconte and Horn, I believe it has no connection with the stridulatory apparatus. A much more extensive and highly developed system of similarly prepared surfaces exists in the *Passalidæ* in connection with the spiracles, and I incline to the opinion that these structures will be found to be connected with respiration. The inner faces of the elytra of many beetles have a beautifully pearly or minutely polished surface at the spot where they are in apposition with the chief abdominal spiracle on each side of the body. The presence of this area appears in fact to be the rule rather than the exception in *Coleoptera*.

Cambridge: July 31st, 1897.

A CURIOUS HABIT IN CERTAIN MALE *PERLIDÆ*.

BY C. A. BRIGGS, F.E.S.

The *Perlidæ* are such bad subjects for the damp box that I always bring home my specimens alive in glass-topped boxes, killing and setting them at leisure. It is owing to this that I noticed the curious habit to which I refer.

One day while sitting with a number of full boxes on the table before me, my attention was aroused by a low but distinct tapping noise, which I ultimately traced to boxes occupied by ♂ *Chloroperla grammica*. At first I thought it was a case of stridulation, but further observation showed that the noise was entirely caused by percussion, and was produced by the ♂ curling upwards the last segment of the body and striking the bottom of the box violently with the under-side of the next segment, just where there is a little hard protuberance; the caudal setæ being violently agitated at the same time.

I have since watched a great number of specimens, and though I have occasionally noticed the rapping while the insect was on the side of the box, I have never noticed it while the insect was clinging,

* The specimen examined is from the Hedjaz province of Arabia, whence the species has, I believe, not been previously recorded.

under-side up, on that which for the time was the top of the box, nor have I known it produced by the ♀s. A similar, but very much louder noise is produced by the ♂ of *Perla cephalotes*, and, I think, also by that of *P. maxima*. In the case of *P. cephalotes* the noise is sometimes nearly as loud as that produced by a mouse nibbling behind a wainscot. *P. cephalotes* gives three or four raps only at a time, but *Ch. grammatica* gives three or four series of raps in quick succession, each series consisting of four raps.

I do not at present see the object of this habit, which I have only observed in confinement, and which did not seem to produce any particular effect on ♀s in adjacent boxes, nor can I find any mention of it in the few authors who have written on the group. Is it an instance of "calling," confined to ♂s, so many of which in this group have the wings more or less abortive?, or is it an expression of rage? Slapping the floor with the stomach seems a curious way of expressing the feelings!

Rock House, Lynmouth, N. Devon:

August 11th, 1897.

[Mr. Briggs' valuable observations should be followed up and further elucidated, and especially as to whether it is the motion only, or the sound produced by the motion, that is the essential factor. The bottom of a chip or cardboard box is a resonant surface, the like of which would scarcely occur to the insect in a state of nature: a dead leaf would probably be the nearest. It would be interesting to know the behaviour of pairs (♂ ♀) of the insects or of several of each sex confined in the same box.—R. McLACHLAN.]

THE *CIMEX* IN THE NESTS OF DOMESTIC FOWLS.

BY J. W. DOUGLAS, F.E.S.

Since the publication of the notes on this subject (pp. 159 and 185, *ante*), I have become aware that one of the Bulletins of the U. S. Department of Agriculture* contains, among other matters of much interest, copiously and excellently illustrated, an account of *Acanthia inodora*, A. Dugès,† a species infesting poultry in Mexico, with a figure of it prepared from specimens forwarded by Dr. A. Dugès.

* Bulletin No. 5, n. s. U. S. Dept. of Agriculture. Division of Entomology. Insects affecting domestic animals: an account of the species of importance in North America, with mention of related forms occurring on other animals. Prepared under the direction of the Entomologist, by Herbert Osborn, Professor of Zoology and Entomology, Iowa Agricultural College, Ames, Iowa. Washington, 1896. pp. 1—302.

† *La Naturelle*, 2nd Series, vol. ii, 1892, p. 189, Pl. viii, 8 figs.

The insect is not described in this paper, but referring to the figure the writer of the article says, p. 161 :—

“It will be seen that the form is quite distinct from that of the ordinary house bug, especially in the excavation of the prothorax in front, which is very slight, the lateral angles not projecting forward on the sides of the head.”

Jenyns' descriptions of his three species—*columbaria*, *hirundinis* and *pipistrelli* are copied in full ; *A. hirundinis* is figured entire, and an antenna of *hirundinis*, *lectularia* and *inodora* are figured side by side to show the different proportions of the joints in each.

Prof. C. H. Tyler Townsend writes of *A. inodora* :—

“There exists in Southern New Mexico a Cimicid, known by the Mexican name of “Coruco,” which is an unmitigated pest to poultry in this region. When the insect once gains access to the hen-house it soon swarms in great numbers, infesting the inmates and roosts, and covering the eggs with the excrements, which show as black specks. It is a very difficult pest to exterminate, and has been frequently known to spread from roosts to dwelling houses, where it proves more formidable than the bed-bug. This insect also exists in western Texas.”

These particulars are very much like those quoted by Mr. Theobald (p. 185 *ante*) ; still the European species may not be the same as the American, nor yet identical with *A. columbaria* or *lectularia*, as seems to have been generally assumed, and so the matter is worthy of investigation.

153, Lewisham Road, S.E. :

August, 1897.

NOTES ON SOME *TENTHREDINIDÆ*, WITH ADDITIONS TO THE BRITISH LIST.

BY THE REV. F. D. MORICE, M.A., F.E.S.

Since the beginning of this year I have been in correspondence with the well-known authority on *Tenthredinidæ*, &c., Pastor Konow of Teschendorf (Mecklenburgh), who has rendered me the greatest possible assistance in determining British specimens, as to whose identity I was either doubtful or altogether in the dark. Herr Konow finds among my specimens (which were nearly all taken either in Surrey or in Warwickshire) several which are additions to the British list, and a few which may prove to be new species. Of these, however, I shall at present say nothing. They are mostly isolated specimens, and some are (most unfortunately) “carded,” so that it is impossible to examine them properly ; nor am I yet in a position to give a complete list even of those, which are certainly species known

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on the Continent, but not recorded from England. The following will be, accordingly, only a sort of "interim report," in which I shall mention a few of Herr Konow's determinations of my captures, and add such stray notes as occur to me on particular species.

1. *Tenthredopsis litterata*, Geoff. (= *Thomsoni*, Knw.).—The females of this species (see Cameron, Mon., iv, p. 153) figure in collections under a variety of names, *cordata*, *microcephala*, *femoralis*, &c. They differ widely in colour, but may be known in all cases by the very large hypopygium. Mr. Cameron says he has never seen its real male, that which he had assigned to it in his first volume being really the male of *Coqueberti* (= *ignobilis*, Cam.). I have taken, however, several specimens of the true *litterata* (♂) both in Surrey and in Warwickshire. It is very unlike any of the forms of its ♀, its colour being a pale orange-red with whitish and dusky markings on the head and thorax; and it differs from all other British species in having the last ventral segment widely emarginate at the apex.

2. *Tenthredopsis nassata*, L.—Herr Konow identifies a ♀ taken by me this year at Byfleet (Surrey) as *nassata*, L., var. *lutea*, F. (= *rufata*, Knw.). Mr. Cameron (vol. iv, p. 157) says, "neither among my Continental nor British species can I find a specimen which I can identify as *nassata*, Knw." This species, then, is apparently new to our list.

3. The *nassata* of Cameron (vol. i) is named by Konow *Raddatzi*, n. sp. Of this I have taken several specimens, which includes Konow's three varieties, *inornata*, *sagmaria*, and *dorsata*.

4. *Tenthredopsis spreta*, Lep. (= *obscura*, Knw.).—This species also appears to be "new to Britain." I have taken a ♂ in Surrey and a ♀ in Warwickshire.

5. *Tenthredopsis Coqueberti*, Klg. (= *ignobilis*, Cam.).—This is perhaps the commonest species in Surrey. I have taken it abundantly in several localities.

6. *Tenthredopsis campestris*, L. (= *scutellaris*, Pz.).—Konow notes a ♀ in my collection taken at Virginia Water, "= *fulviceps*, Steph.!"

7. *Allantus distinguendus*, de Stein.—I have taken this pretty species at Virginia Water. It is new to our list, and indeed has only very recently been discovered.

8. *Dolerus ariceps*, Thoms.—I have taken this species both in Surrey and in Warwickshire. Mr. Cameron seems not to know it as a British insect. It is like a small *pratensis*, L. (= *fulviventris*, Cam.), but with distinctly shorter antennæ.

9. *Dolerus Thomsoni*, Knw. (= *brevispina*, Thoms., non Zadd.).—I have a ♀ from the neighbourhood of Woking. According to Konow this species is Cameron's *anticus*; but to this Mr. Cameron demurs (Mon., iv, p. 164), considering his species to be the true *anticus*, Klg., and not *Thomsoni*. If he is right, we must have both species (*anticus* and *Thomsoni*) in England, and the latter will be an addition to our list.

10. Genus *Loderus*, Knw.—This genus has been separated from *Dolerus* to embrace the species with "oblong" eyes. I have taken this year, in this neighbourhood, all the three British species belonging to it, viz., *palmatus*, Klg., *vestigialis*, Klg., and *pratensis*, Fall. The last of these is only previously recorded as British in Mr. Cameron's second volume (p. 220) from a capture by Mr. E. Saunders at Chobham.

11. *Strongylogaster cingulatus*, F.—Though the ♀ of this is common, the ♂ is said to be extremely rare. Mr. Cameron (Mon., i, p. 189) says, "I have only succeeded in getting one ♂, which I bred," and "Mr. F. Smith . . . has taken in all only five or six males." This spring, at Swanage, I found both sexes abundant on ferns. I took five males, and could easily have secured a long series if I had known that there was any object in doing so.*

Further remarks I reserve for a future occasion. I have already alluded to the unfortunate fact that some of my specimens are "carded," and therefore not determinable with certainty. At Herr Konow's advice I have wholly abandoned this method of preparing *Tenthredinidæ*, and venture to call the attention of collectors to a sentence in one of his letters, which I shall personally always bear in mind in future—"Aufgeklebte Hymenoptern für wissenschaftliche Untersuchungen völlig unbrauchbar sind." Generally, in the *Tenthredinidæ*, it is as necessary to examine the ventral surface as much as the dorsal, and sometimes (*e. g.*, in *Tenthredopsis*) even more so. Sometimes, too, an insect is not determinable for certain without a good view of the mouth, or the mesopleuræ, or the under-side of the legs, or the claws, all which parts are liable to be hidden in carded specimens

Woking: August 12th, 1897.

Local Lists of British Lepidoptera.—One would suppose that all the workers in the broad field of Natural History, more particularly those who make the British insect fauna their chief study, would thoroughly endorse Mr. Barrett's remarks (*ante* p. 187) on the usefulness of local lists; but as one of the sponsors to the "Fauna of the Counties of Kent, &c.," proposed by the South London Society, to which he refers, I have grave reason for doubt whether any great amount of interest is taken in such matters by the general body of Entomologists. Such lists to be of any real value must be accurate, well up to date, and something more than mere lists of names, and it was upon these lines that the South London Society proposed to work. Evidently to attain such ends, something more than the "dry bones" of published records would have to be resorted to, and the co-operation of a large number of workers throughout the districts embraced in the scheme would have to be sought. With a view to obtaining this, a note, accompanied in many cases by a plan, &c., was widely circulated and accepted in a manner that appeared to portend a successful result; but the extreme apathy ultimately manifested, especially by those outside the Society, proved only too clearly the utter want of interest in such matters by the general body of Entomologists. Under such circumstances it is not surprising that the somewhat elaborate machinery that the Society had prepared for carrying out the project has been allowed to remain at a standstill.—ROBT. ADKIN, Lewisham: August, 1897.

* I found the males commonly near Croydon at the end of May and beginning of June, 1897.—R. McL.

Deilephila galii in Devon.—I should like to record the capture of a larva of *Deilephila galii* here on the 7th inst. ; it spun up on the surface of the sand on the 13th.—C. F. BONTNALL, Cofton Rectory, Starcross, Devon : August 15th, 1897.

The larvæ of Depressaria heracleana.—In my garden a root of *Heracleum giganteum* annually puts forth numerous stems which in due time are crowned with large, showy umbels of white flowers. But this year the full development of these has been arrested, the stems being contorted and tightly drawn together, so as to form in each instance a bulky mass, inside which are two or three Lepidopterous larvæ, which, as well as the said structures, are described and figured in "The Natural History of the *Tineina*," vi, p. 112, pl. iii, fig. 2, as of *Depressaria heracleana*. I had supposed that these receptacles were formed to serve as lairs from which the larvæ made floral raids at night, the imago having crepuscular or nocturnal habits, and was therefore much surprised on the 14th inst. to see several instances of a larva stretched at full length on the top of what remained unconsumed of an umbel, actively engaged in nibbling the unexpanded flower-buds, and this in bright sunshine, temp. 102° Fahr. ; they were naked, and not ashamed of the destruction they had caused all round. I also saw one large larva rapidly descending a flower-stem, among or over the green *Aphides* with which it was covered. This voluntary exposure to the heat and light of a summer day I do not think has hitherto been recorded. To-day I noticed in two or three places that white frass is exuding from small holes in the stems, thrown out, doubtless, by larvæ which have retreated there to undergo their pupal change. "*Nous revenons toujours à nos premières amours*," and I am glad of this opportunity to express the pleasure I have in renewing an entomological *liaison* formed more than 40 years ago.—J. W. DOUGLAS, 153, Lewisham Road, S.E. : July 17th, 1897.

Cimices in birds' nests?—As pigeons and swallows are known to harbour each a particular species of *Acanthia*, it is not unreasonable to expect that other birds, especially such as use the same nest or habitat year after year, *e. g.*, sparrows, jackdaws, starlings, woodpeckers, &c., have each their special attendant bug, one, moreover, not yet known to science. Who will go up and explore? It might easily be done by the aid of a (boy) deputy, a ladder, a bag, a shilling, and a policy of accident-insurance, given always the opportunity and the will.—ID.

Harpalus ruficornis, F., destructive to ripe strawberries.—When I penned the few notes under this heading that appeared in the August No. of this Magazine (p. 171 *ante*) I had overlooked Miss Ormerod's extended notes on the same subject in her "Report" for 1895 (published early in 1896), which should be consulted by all interested. From direct observation, and information received, her experience and my own agree in the main. I would, however, repeat that in my opinion the "mulch" or litter placed round the plants is mainly responsible for harbouring the beetles, and that attention to this point will probably be the means of discovering a method of lessening the evil.—R. McLACHLAN, Lewisham : August, 1897.

Some recent captures of British Coleoptera.—Among my captures this year are the following :—New Forest—at Easter, *Scaphidium quadrimaculatum* and *Mesosa*

subila, in decayed wood. In May, on the whitethorn, *Calosoma inquisitor* (abundant), *Corymbites bipustulatus*, *Clytus mysticus*, *Grammoptera præusta* (6), and *Pogonochærus dentatus*.

On the Downs between Horsley and Mickleham.—In March, *Chrysomela gotttingensis*. In May, *Hedobia imperialis*. During June and July, *Cytilus varius*, *Hoplia philanthus*, *Dascillus cervinus*, *Phytæcia cylindrica*, *Cryptocephalus ochrostoma*, *Mordella fasciata* (abundant), *Mordellistena abdominalis*, *M. humeralis*, and *Cionus blattariæ*; also *Molorechus minor* and *M. umbellatarum* by sweeping under fir trees.

At Wicken Fen.—In July, *Silis ruficollis*, *Anthocomus terminatus* (6), *Agapanthia lineatocollis*, *Oberea oculata* (♂ and ♀), and *Ctenopus sulphureus* (4), the last being unexpected so far from the coast.—W. J. ASHDOWN, Leatherhead: July 31st, 1897.

Tachys parvulus, Dej., &c., in Cornwall.—During a recent visit to Cornwall (June 19th—July 15th), spent partly at Portscatho, Gerrans Bay (a few miles to the east of Falmouth), and partly in the Scilly Islands and Penzance, a few interesting *Coleoptera* and *Hemiptera* were met with, some of which have not been recorded from so far west. The following species were observed on the mainland: *—*Tachys parvulus*, Dej., sparingly, in three different localities in Gerrans Bay, at the base of the cliffs, in sandy places kept moist by the percolation of fresh water from the high ground above. This minute *Tachys* was somewhat doubtfully introduced as British by Canon Fowler (Col. Brit., i, p. 98), upon the authority of a single specimen found at Wallasey in 1884, but subsequently placed by him amongst the doubtful species. It is smaller than any of our other British *Carabidæ*, and may be easily known from *T. bistriatus* by the deeply impressed dorsal striæ of the elytra, the differently shaped thorax, &c. *T. parvulus* is not rare in France, occurring both inland and on the coast. *Bembidium pallidipenne*, Ill., rarely, in damp sandy places, Gerrans Bay; *B. rufescens*, Guér., common, in a dried-up watercourse, Gerrans Bay. *Cilleus lateralis*, Sam., sparingly, Portcuil, on the muddy banks of the river running into Falmouth Harbour. *Lymnæum nigropiceum*, Marsh., singly, on the beach, Portscatho. *Aëpus marinus*, Ström, and *A. Robini*, Lab., rarely, Portscatho and Falmouth, in their usual habitat. *Harpalus melancholicus*, Dej., in some numbers, at Whitesand Bay, Land's End, in the sand; *H. tenebrosus*, Dej., and *H. ignavus*, Duft., rarely, Gerrans Bay. *Amara bifrons*, Gyll., and *A. aulica*, Panz., Whitesand Bay; *A. ovata*, Dej., Portscatho; *A. lucida*, Duft., Land's End. *Agabus paludosus*, F., and *Hydroporus lituratus*, F., in fresh water pools on the rocks, Portscatho. *Ochthebius Lejolsi*, Muls. and Rey, in abundance in various places in Gerrans Bay, and also at Falmouth, in stagnant, shallow, brackish pools on the rocks occasionally reached by high tides. It seems extraordinary that this insect so long escaped observation in this country, as it occurs apparently in almost every suitable place along these western coasts. The insect readily takes to wing, and must be constantly shifting its quarters as the pools dry up. Many pairs were seen in copulation swimming back downwards, and larvæ were noticed in the same pools. *O. bicolon*,

* A list of the Scillonian species will be given in a subsequent paper.

Germ., Portscatho. *Helophorus granularis*, Thoms., and *H. æneipennis*, Thoms., in rock pools, with the *Ochthebius*. *Cercyon depressus*, Steph., under seaweed, Portscatho. *Homalota longula*, Heer, abundant, in the damp sand, with the *Tachys*, at Gerrans Bay; *H. plumbea*, Wat., common, under seaweed. *Actocharis Readingi*, Sharp, in some numbers at Falmouth, under stones below high-water mark, in the locality discovered several years ago by Mr. J. J. Walker. Most of the specimens were taken from the under-side of the stones, those in the sand and shingle generally escaping. *Diglossa mersa*, Hal., with the preceding, Falmouth, and also at Portscatho. *Cafius fucicola*, Curt., *C. xantholoma*, Grav., and var. *variolosus*, Sharp, and *C. sericeus*, Holme, under decaying seaweed, Portscatho. *Actobius signaticornis*, Rey, in damp places, with *Homalota longula*, Portscatho. *Ocypus ater*, Grav., Portscatho and Land's End. *Trogophlæus halophilus*, Kies., about the rock pools, Portscatho. *Silpha lavigata*, F., Land's End, Penzance, and Portscatho. *Gnathoncus nannetensis*, Mars., under seaweed, Portscatho. *Saprinus virescens*, Payk., fragments of a dead specimen picked up at Portscatho. *Ochina hedere*, Müll., Portscatho. *Opatrum sabulosum*, Gyll., Land's End and Portscatho. *Heliopathes gibbus*, F., common, Land's End, Penzance, and Portscatho. *Ctenopus sulphureus*, L., Portscatho and Land's End, abundant, typical form only. *Anthicus tristis*, Schmidt, common, under decaying seaweed, Portscatho. *Nacerdes melanura*, Schmidt, Portscatho. *Otiorrhynchus rugifrons*, Gyll., and *O. ligneus*, Oliv., Land's End and Portscatho. *Trachyphlæus scaber*, L., *Strophosomus retusus*, Marsh., Portscatho. *Exomias pyrenæus*, Bris., sparingly, by sweeping herbage on the banks of a stream, Portscatho. *Ceuthorrhynchidius Dawsoni*, Bris., *Phytobius 4-tuberculatus*, F., and *Hypera suspiciosa*, Herbst, Portscatho. *Lamprosoma concolor*, St., in a rock pool, Portscatho. *Chrysomela Banksi*, F., Portscatho. Amongst the *Hemiptera*, *Geotomus punctulatus*, Costa, occurred commonly at Whitesand Bay, Land's End, in the original locality; *Dieuches luscus*, F., at Portscatho; and *Ætophilus Bonnairei*, Sign., singly, with the *Actocharis*, at Falmouth.—G. C. CHAMPION, Horsell, Woking: August 11th, 1897.

Telmatophilus sparganii, Ahr.: note on male characters.—The males of this species, like those of *T. caricis*, differ from the females in having the hind femora incrassate, the hind tibiæ arcuately dilated externally at the base (thus appearing bowed), and the last ventral segment impressed in the middle. These characters have not been noticed by English writers, and they appear also to have escaped the observation of Kiesenwetter (Ins. Deutschl., iv, p. 671), who describes the sexual peculiarities of three species of the genus. It is probable, however, that he had females only of *T. sparganii* before him. Jacquelin Duval's figure (Gen. Col. d'Europe, iii, t. 52, fig. 260) evidently represents a male, though the sex is not stated. In the other European species of the genus, all of which it may be noted are found in Britain, the males appear only to differ from the females in having the last ventral segment foveolate. This character I have not been able to verify in *T. brevicollis*, my specimens apparently being all females: Kiesenwetter (*op. cit.*, p. 672) states that the last ventral segment is broadly and deeply foveolate. I am indebted to Mr. Bennett for specimens of both sexes of *T. sparganii* from Winchelsea.—*Id.*

Application for British Platypezidæ.—I have been studying and describing British *Syrphidæ*, *Pipunculidæ* and *Platypezidæ* for the last few years, and while I think I have seen and described nearly all the *Syrphidæ* and *Pipunculidæ*, I have lamentably failed in the genus *Platypeza*, and I may even admit that, after more than thirty years' collecting, I have not seen a good pair of even one species of that genus, though about a dozen species occur in Britain. I possess various good specimens of *Callimya*; but of *Platypeza*, though I have twenty or thirty of *P. modesta* for instance, I have not seen a single male fit for description. If any one can send me good specimens of *Platypezidæ* I shall be glad to see them, and will undertake to quickly return them; and I may add, that I would very willingly name any *Pipunculidæ*, or difficult species of *Syrphidæ* belonging to such genera as *Chrysogaster* or *Pipiza*.—G. H. VERBALL, Sussex Lodge, Newmarket: August, 1897.

Myrmosa melanocephala in Warwickshire.—With the exception of a ♀ taken by Mr. Martineau last year in Sutton Park, I believe this species has not been recorded from Warwickshire. Making a note to look for it this year, I had quite forgotten it, when I accidentally came across the insect in the following manner. On July 11th in the afternoon, working a stone wall in the road close to my house for Crabros, I found a parasitic Metopid, and not being satisfied about the species I went again at 6 o'clock in the evening hoping to take more, when, to my surprise, I found a ♀ *melanocephala* crawling on the wall. Acting on this I visited the wall daily, until, on the morning of the 14th, between 9.30 and 10, I was rewarded by taking two females and seven males. The males were crawling about the wall and taking short flights, reminding me much of a Phytophagous Hymenopteron.

I visited the wall for several days, morning, noon and evening, but no more were seen. Doubtless I had luckily hit upon the time the males were just emerging at 9.30, but as the wall was in the shade at that time, it is possible they may emerge earlier in a different situation. This capture is interesting, as Mr. Saunders, in his work on the *Hymenoptera*, says, "little is known of its habits; males occur on flowers."—RALPH (J.) BRADLEY, Sutton Coldfield: August, 1897.

Ceropales variegata near Holmwood.—In August last year (1896) I was fortunate enough to secure a ♂ of the exceedingly rare *Ceropales variegata* in this district. According to Mr. Ed. Saunders this insect is only known to have occurred on five occasions in Great Britain, the last of these being as far back as 1876. I was in doubt at the time as to where I took it; but yesterday (July 31st) I took both sexes of the commoner *C. maculata* flying over a patch of the common heather which I remember visiting on the day I secured *C. variegata* last year, and I have little doubt now that it was taken at this spot and under similar conditions.—C. H. MORTIMER, Wigmore, Holmwood, Surrey: August 1st, 1897.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: July 19th, 1897.—MR. G. H. KENRICK in the Chair.

Mr. Bradley showed cocoons and imagines of *Apanteles formosus*, an ichneumon

parasitic on *U. sambucata*, the cocoons being suspended from leaves, &c., by means of long filaments; also a male *Sirex gigas* from Sutton. Mr. Kenrick, some *Lepidoptera* from Inverness-shire—*Anarta melanopa*, which he said was not long ago supposed to be confined to Rannoch, but was now known to occur throughout Inverness-shire at 3000 above the sea level, and he had also seen specimens from still another locality; these came from a spot nearly on the borders of Inverness-shire and Perthshire, where the insect was common; he also showed from the same county *Hadena glauca*, which was common, *Soodiona belgiaria* and *Nemeophila plantaginis*, with dark females, which he believed to be var. *hospiton*. Mr. Chase, living larvæ of *Eriogaster lanestris*.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
June 24th, 1897.—Mr. R. ADKIN, F.E.S., President, in the Chair.

Mr. W. H. Drury, F.R.H.S., of Kingston-on-Thames, and Mr. J. Sandison, of Wimbledon, were elected Members.

Mr. South exhibited the series of *Zygæna filipendula* taken in Middlesex, and referred to at length in the Entomologist, July, 1897; he was unable to draw any fine distinction between var. *hippocrepidis* and the type, and remarked that it was necessary that considerable attention should be paid to the *Zygæna* before any certainty could be expressed as to the specific value of the various forms. Mr. Adkin, series of *Cyaniris (Lycæna) argiolus* bred from ova and larvæ taken last autumn at Eastbourne (Proc. S. Lond. Ent. Soc., 1896, p. 110), and contributed notes.

July 3rd.—Field Meeting at Reigate.

July 8th.—The President in the Chair.

Mr. A. Perry, of Anerley, was elected a Member.

Mr. Lucas exhibited nymph cases of *Anax formosus* taken by himself and Mr. W. Prest at the Black Pond, Esher, in June. Mr. Auld, a fine bred series of *Phorodesma bajularia* from the New Forest. Mr. Malcolm Burr, a small collection of *Orthoptera* from the Persian Gulf, collected by Mr. J. H. Hiles; they were chiefly European species (see Entomologist, July, 1897). Mr. Ficklin, three specimens of *Dianthæcia luteago*, var. *Barrettii*, from Cornwall this year; they were very different from the Irish form, being grey. This was interesting, as being the second well authenticated occurrence of the species in England. Mr. Mera, a bred series of *Hadena dissimilis (suasa)* from Essex, including a specimen having all the markings converted into longitudinal streaks. Mr. Turner, a bred series of *Cleora lichenaria* from Ashdown Forest, and series of several species of *Coleoptera*, including *Strangalia melanura* from Rannoch Common, *Cionus scrophulariæ* from Chalfont Road, and *Leptura livida* from Canvey Island. Mr. R. Adkin, series of *Eupithecia satyrata*, var. *Curzoni*, bred from Shetland larvæ, and contributed notes.—H. J. TURNER, *Hon. Secretary*.

A PRELIMINARY LIST OF COLEOPTERA AND HEMIPTERA OF THE SCILLY ISLANDS.

BY G. C. CHAMPION, F. Z. S.

Very little appears to have been done in the way of entomological collecting in the Scilly Islands, and a list of the *Coleoptera* and *Hemiptera* met with during my recent visit (July 6th to July 15th) may be of some interest from a faunistic point of view. Making my headquarters at Hugh Town, St. Mary's, I visited in turn Tresco, Samson, Bryer, St. Martin's, St. Agnes, and Arthur, but was unable to land on Annet, Rosevear, and others, when I made the attempt, the sea being too rough at the time. Most of the outer coast is very rocky and unsuitable for work, but on the inside there are several beautiful sandy beaches, well sheltered from the wind, as on Tresco, though the sand is too coarse and gritty on some of them to be of much use; these beaches having a fair amount of coast plants, such as *Euphorbia paralias*, *Glaucium*, *Erodium*, *Cakile*, *Crithmum*, *Eryngium*, *Salsola*, &c. The rough higher ground is mostly covered with furze, heather, and bracken, the latter growing right down to the beach. On the slopes of the larger islands most of the available ground is under cultivation (chiefly *Narcissus* and other spring flowers), divided up into small squares, separated by hedges of *Veronica* or *Escallonia*, or else by stone walls, upon which there is an abundance of *Mesembryanthemum* in places, these cultivated patches being nearly all choked with weeds at the time of my visit. On several of the larger islands, as on Tresco and St. Mary's, there is a certain amount of fresh water and marshy ground. Altogether, some of the islands looked likely enough for collecting, Tresco especially, but the result of nine days' work amounted only to 102 species of *Coleoptera* and twelve of *Hemiptera*; the very dry weather prevailing at the time of my visit may, however, partly account for the paucity of insect life. The *Coleoptera* observed were nearly all of the commonest description, while in the *Hemiptera* the hitherto very rare (as British) *Emblethis verbasci* was abundant on two of the islands (Tresco and Samson), this being, in fact, the only interesting species met with.

The following list could no doubt be considerably augmented if the smaller dung- and seaweed-frequenting *Staphylinidæ*, &c., were properly collected, and doubtless a good deal more could be done in a general way earlier in the season, in April, May or June. Mr. J. J. Walker has supplied me with a list of *Coleoptera* (40) collected by him on St. Mary's on July 28th, 1879, and the Rev. H. S. Gorham a

list of his captures (13) on the same island on August 16th, 1893. Their additions to my list are mentioned below, and the captors indicated by initial letters; those not otherwise noted were found by myself, and by Mr. Walker also if marked with a *, and by Mr. Gorham if marked with a †. The total number of species of *Coleoptera* enumerated is 126, twenty-one of these having been taken from Mr. Walker's list and three from that of Mr. Gorham.

COLEOPTERA.

Notiophilus aquaticus, L., St. Mary's†. *Broscus cephalotes*, L., St. Mary's*†, common. *Harpalus ruficornis*, F., St. Mary's* and St. Agnes, common; *H. æneus*, F., St. Mary's*, St. Martin's, St. Agnes, abundant and very variable; *H. rubripes*, Duft., St. Mary's (J. J. W.); *H. consentaneus*, Dej., St. Mary's*, St. Martin's, St. Agnes, sparingly, on the sandy beaches; *H. tardus*, Panz., St. Mary's and Tresco. *Amara trivialis*, Gyll., St. Mary's, St. Martin's, St. Agnes, Tresco and Samson, abundant, on the sandy beaches, and very variable; *A. ovata*, F., St. Mary's; *A. familiaris*, Duft., St. Mary's (J. J. W.), Tresco; *A. bifrons*, Gyll., St. Mary's, not rare; *A. apricaria*, Sturm, St. Mary's. *Calathus cisteloides*, Panz., St. Mary's*†, St. Agnes; *C. mollis*, Marsh., St. Mary's*†, St. Martin's, St. Agnes, abundant, on the sandy beaches; *C. melanocephalus*, L., St. Agnes, St. Mary's*†. *Anchomenus marginatus*, L., St. Agnes, common, on the banks of a pond, St. Mary's (J. J. W.); *A. parumpunctatus*, F., St. Mary's (J. J. W.); *A. albipes*, F., St. Mary's. *Pterostichus strenuus*, Panz., St. Mary's (J. J. W.). *Olisthopus rotundatus*, Payk., St. Mary's. *Bembidium littorale*, Ol., St. Mary's. *Aëpus marinus*, Ström, St. Mary's. *Demetrias atricapillus*, L., St. Mary's. *Metabletus foveola*, Gyll., Tresco.

Agabus bipustulatus, L., St. Mary's (J. J. W.). *Philhydrus maritimus*, Th., Samson. *Ochthebius Lejoli*, Muls. & Rey, St. Mary's, two specimens only, in a rock pool; *O. margipallens*, Latr., St. Mary's and St. Agnes. *Helophorus brevipalpis*, Bedel, St. Mary's. *Sphæridium scarabæoides*, F., St. Mary's, Arthur. *Cercyon depressus*, Steph., St. Mary's; *C. unipunctatus*, L., St. Mary's.

Aleochara bipunctata, Ol., St. Mary's†; *A. nitida*, Grav., St. Mary's, Tresco; *A. grisea*, Kr., Tresco; *A. algarum*, Fauv., Tresco. *Homalota vestita*, Grav., *H. analis*, Grav., *H. indubia*, Sharp, *H. sordida*, Marsh., *H. pilosiventris*, Th., St. Mary's; *H. fungi*, Grav., St. Mary's, Tresco, St. Martin's. *Tachyporus pusillus*, Grav., St. Martin's. *Tachyusa sulcata*, Kies., *Diglossa mersa*, Hal., *Falagria obscura*, Grav., *Hypocyrtus longicornis*, Payk., *Heterothops binotata*, Er., and *Quedius boops*, Grav., St. Mary's; *Q. fulgidus*, F., Tresco. *Creophilus maxillosus*, L., St. Mary's. *Ocytus olens*, Müll., St. Mary's; *O. ater*, Grav., St. Mary's†, St. Agnes; *O. cupreus*, Rossi, St. Agnes. *Philonthus æneus*, Rossi, St. Agnes; *P. varius*, Gyll. (H. S. G.), *P. sanguinolentus*, Grav. (H. S. G.), *P. cruentatus*, Gmel. (H. S. G.), *P. fimetarius*, Grav., *P. trossulus*, Nordm., *P. varians*, Payk., and *P. quisquiliarius*, Gyll., var. *dimidiatus*, Er.*, St. Mary's. *Caflus fucicola*, Curt., St. Mary's, St. Agnes; *C. xantholoma*, Grav., and var. *variolosus*, Sharp, St. Mary's and Tresco. *Xantholinus tricolor*, F., St. Mary's* (already recorded from Scilly); *X. linearis*, Ol., St. Mary's (J. J. W.). *Pæderus fuscipes*, Curt., St. Mary's (J. J. W.). *Omalium riparium*, Th., St. Mary's.

Ptenidium punctatum, Gyll., and *P. evanescens*, Marsh., St. Mary's. *Saprinus maritimus*, Steph., St. Mary's. *Olibrus aeneus*, F., St. Mary's (J. J. W.); *O. consimilis*, Marsh., St. Agnes. *Meligethes picipes*, Sturm, St. Mary's (J. J. W.). *Micrambe vini*, Panz., Tresco and St. Mary's*, abundant on furze blossom. *Melanophthalma gibbosa*, Herbst, and *M. fulvipes*, Com., St. Mary's and Tresco. *Simplocaria semistriata*, F., St. Mary's, Tresco and Samson, abundant, at the roots of *Erodium*, *Euphorbia*, &c., on the sandy beaches.

Coccinella 7-punctata, L., *C. 11-punctata*, L., and *Rhizobius litura*, F., St. Mary's, St. Agnes and Tresco.

Onthophagus fracticornis, Payk., St. Martin's. *Aphodius erraticus*, L., *A. fœtens*, F., *A. nitidulus*, F., *A. merdarius*, F., St. Mary's; *A. rufescens*, F., Arthur. *Egialia arenaria*, F., St. Mary's. *Geotrupes spiniger*, Marsh., St. Martin's; *G. typhaeus*, L., St. Mary's (J. J. W.). *Serica brunnea*, L., St. Mary's and Tresco. *Cetonia aurata*, L., St. Mary's, Arthur and St. Martin's; seen on *Mesembryanthemum* flowers, on the walls.

Agriotes lineatus, L., St. Mary's; *A. pallidulus*, Ill., St. Mary's (J. J. W.) *Cyphon variabilis*, Thunb., St. Mary's*. *Dasytes flavipes*, F., St. Mary's.

Heliothæus gibbus, F., St. Mary's*†, Tresco, St. Martin's, St. Agnes, Samson, Arthur, common on all the sandy beaches. *Crypticus quisquilius*, L., St. Mary's*, Tresco and St. Agnes, sparingly, with the preceding. *Phaleria cadaverina*, F., St. Mary's. *Helops striatus*, Fourcr., St. Mary's. *Lagria hirta*, L., St. Mary's (J. J. W., H. S. G.), Tresco.

Otiorrhynchus sulcatus, F., and *O. rugifrons*, Gyll., St. Mary's* (the latter has already been recorded from Scilly); *O. ligneus*, Ol., St. Mary's† and St. Martin's, common, as on the Cornish coast, under stones and at roots of plants; *O. atroapterus*, De G., St. Mary's and St. Martin's; *O. ovatus*, L., St. Mary's (J. J. W.). *Molytes coronatus*, Goeze, and *Philopodon geminatus*, F., St. Mary's. *Strophosomus retusus*, Marsh., St. Mary's and St. Martin's, at the roots of plants, on the coast, as on the mainland of Cornwall. *Orthochates setiger*, Beck, St. Mary's and Tresco, at roots of plants on the sandy beaches. *Sitones puncticollis*, Steph., St. Martin's. *Apion frumentarium*, Payk., and *A. carduorum*, Kirby, Tresco, the latter abundant on thistles; *A. loti*, Kirby, *A. hydrolapathi*, Kirby, *A. pisi*, F., St. Mary's (J. J. W.). *Hypera punctata*, F., and *H. variabilis*, Herbst, St. Mary's (J. J. W.). *Ceuthorrhynchus ericæ*, Gyll., and *C. quadridens*, Panz., St. Mary's (J. J. W.). *Ceuthorrhynchidius troglodytes*, F., St. Mary's (J. J. W.). *Celiodes quadrimaculatus*, L., St. Mary's (J. J. W.).

Cryptocephalus minutus, F., St. Mary's. *Longitarsus jacobææ*, Wat., and *L. femoralis*, Marsh., Tresco, on ragwort. *Sphæroderma testaceum*, F., Tresco. *Psylliodes marcida*, Ill., St. Mary's (J. J. W.).

NOTE.—*Psammobius cæsus*, Panz., has been recorded by Mr. Dale from Tresco (Ent. Mo. Mag., xxxii, p. 41); but I cannot help thinking that this insect must have been accidentally introduced with some of the numerous foreign plants that are constantly being brought over for cultivation in the gardens of Tresco Abbey.

HEMIPTERA-HETEROPTERA.

Pentatoma baccarum, L., Tresco. *Emblethis verbasci*, Fabr., Tresco, Samson

and St. Mary's; commonly at Tresco and Samson, singly at St. Mary's, at the roots of *Euphorbia* and *Erodium*, in all its stages, running with great speed when disturbed. *Stenocephalus agilis*, Scop., St. Martin's and Tresco, with the preceding, not rare. *Nysius thymi*, Wolff, *Rhyparochromus chiragra*, Fabr., *Stygnus arenarius*, Hahn, and *Scolopostethus decoratus*, Hahn, St. Mary's. *Plinthius brevipennis*, Latr., *Monanthia cardui*, L., Tresco. *Peritrechus luniger*, Schill., St. Agnes. *Myrmedobia inconspicua*, D. & S., Tresco. *Corixa lugubris*, Fieb., St. Mary's.

Horsell, Woking:

September 2nd, 1897.

NOTES ON THE SPECIMENS OF *SOLENOBIA TRIQUETRELLA* AND *CHALYBE PYRAUSTA* IN THE DOUBLEDAY COLLECTION.

BY JOHN HARTLEY DURRANT, F.E.S., MEMB. SOC. ENT. DE FRANCE.

Having read Mr. Barrett's notes on the specimens of *Solenobia triquetrella* in the Doubleday Collection (*vide ante*, 128-9) I visited the Bethnal Green Museum last June with named exponents of all the allied species, and also of those near *Chalybe pyrausta*. The Doubleday specimens representing *Solenobia triquetrella* are quite distinct from *triquetrella*, F. R. (which is probably the same as *triquetrella*, Hb.); the cases differ quite as much as the perfect insects. The Doubleday specimens appear to me to belong either to a strongly marked form of *Wockii*, or more probably to a species intermediate between *Wockii* and *inconspicua*, having the facies of the latter with the colouration of the former, but with a more distinct pattern. There are no specimens in the Zeller or Walsingham Collection which quite agree with them, but until a series is obtained it will be impossible to decide whether they represent a new species.

The specimen labelled *Chalybe pyrausta* is the true *Ethmia pyrausta*, Pall.; it is rather small, but is readily recognised by the discal spots being arranged thus . . ., it could, therefore, only be confused with *flavitibiella*, H.-S., from which it is at once separated by the greater number of yellow abdominal segments and by its paler colour: *andalusica*, Stgr., and *chrysopyga*, Z., differ in having the discal spots thus . . ., and are separated *inter se* by the greater number of yellow abdominal segments found in *andalusica*. The history of this specimen is unknown, but as only one specimen has been taken in the British Islands, it is either that captured by Mr. Buxton (which has disappeared), or it is a foreign exponent of the species.

Merton Hall, Thetford:

August 12th, 1897.

APROÆREMA, n. n.

(= *ANACAMPSIS, Auct., nec Crt.), type *Tinea anthyllidella*, Hb.

BY JOHN HARTLEY DURHANT, F.E.S., MEMB. SOC. ENT. DE FRANCE.

Lord Walsingham has already pointed out that **Anacampsis*, Stgr. Cat., Meyr., does not contain Curtis' specified type *populella*, Cl., and that the restoration of this type to its proper genus renders *Tachyptilia*, Hein., a synonym of *Anacampsis*, Crt. (nec Stgr. Cat.), [vid. Wlsm., Ent. Mo. Mag., XXXI, 41, 43 (1895): Pr. Z. Soc. Lond., 1897, 79].

**Anacampsis* (Stgr. Cat.), Meyr., HB. Br. Lp., 581 (1895), is thus left nameless, and I am at present unacquainted with a name that can be used for this genus, it is however possible that one may lie dormant which may eventually be rescued from oblivion, meanwhile benefit only can accrue from naming what is now nameless; I would therefore propose APROÆREMA (= not the thing chosen before), with the type, *Tinea anthyllidella*, Hb., for the genus as defined by Meyrick, which has so long been wrongly known as *Anacampsis*.

Merton Hall, Thetford:

August 12th, 1897.

HABITS OF *METOPIA LEUCOCEPHALA*, Rossi.

BY G. C. BIGNELL, F.E.S.

I visited a field of sand, the remains of crushed ore from a disused mine in the Meavy Valley, near Yelverton, on July 8th, for the purpose of seeing what *Hymenoptera* had taken possession of this, the only sand to be found for many miles. During the day I frequently saw these Dipterous flies poking their heads into any hole they could find. At last I saw one of them disappear into a hole; I quickly placed my glass-bottomed box over the aperture; in a few seconds it re-appeared, and was duly made prisoner. I still kept watch over the hole, and to my delight saw a female wasp, *Crabro peltarius*, alight close to it with a Dipterous fly; she was in the act of entering when I placed a box over her, with the result that she also was a prisoner. Since then I have captured several of these inquisitive flies, and find that they are viviparous, having found five or six larvæ in each box by the next morning, the last capture producing sixteen in thirty-six hours.

From these observations I do not wish to convey that they only attack *Crabro peltarius*, for I have found them hunting for other victims after *peltarius* had disappeared. During July, in addition to

Crabro peltarius, I saw burrowing in the sand in the same locality *Mimesa bicolor*, *Oxybelus uniglumis*, *Andrena pilipes* and *albicus*. After the above remarks may I ask the question—Is *M. leucocephala* a parasite on the wasp larva, or does it only consume the food provided for it?

From observations made at several visits to this field of sand, I believe that *M. leucocephala* has taken the place of the *Chrysididæ* as a parasite on bees, &c., in this locality, for I only saw one *Chrysid* during my several visits to this spot in July and August.

Stonehouse, Plymouth :

August 24th, 1897.

[In Rondani's "Repertorio degli insetti parassiti," Bull. Soc. Ent. Ital., iv, p. 328, and v, p. 227, *Metopia argyrocephala*, Rossi, is given as parasitic on *Philanthus* and *Bembex*.—Eds.].

HABITS OF *SERICOMYIA BOREALIS*, FLN.

BY THE REV. E. N. BLOOMFIELD, M.A., F.E.S.

In the year 1881 there was an interesting correspondence on the subject of the habits of *S. borealis*; and in my letter, Ent. Mo. Mag., Vol. xviii, p. 159, I asked, "Can any of your readers supply information on its life-history?"

Until lately, I have had no response, except from Messrs. Swinton and Hellins, *l. c.*, p. 189, but seeing a notice in the Naturalist's Journal for May, 1896, by Mr. C. J. Watkins, of Painswick, that *S. borealis* had been bred, I wrote to him for further particulars, which he has most kindly supplied, and he has also sent bred examples to the British Museum.

Three specimens were bred by Mr. W. Sim, of Gourdas, Fyvie, Aberdeenshire, and Mr. Watkins has sent me several extracts from his letters. He says:—

"I have succeeded in breeding the beautiful fly *S. borealis*; it comes from one of the rat-tailed larvæ. We were cutting peat turf for fuel in May, 1894, when I found the 'long tails;' they were in a shallow pool or puddle where fuel had been dug the previous year. The turf was well covered with vegetation common to peat mosses, and some of the sods being too fragile for wheeling away had been tossed back into the pit, but turned upside down. It was in the decomposing mass that I found the maggots surrounded by water; their colour might be called dull grey."

"I regret to say I did not see their transformation. I put them in a tin canister half filled with damp *Sphagnum*, and though I examined them now and

again they were all hatched out before I saw them. One thing is certain, that is, they pass all their stages in the course of the year, as there were no pools at the place previous to 1893."

"The situation is damp, and the pits, though filled with stagnant water, never become putrid or offensive."

"The breathing apparatus of the larvæ was much longer than in some of the rat-tailed maggots I have seen. The tail of the pupa case (which is full half an inch long) is only about a quarter the length of the larval tail. Can you tell me if they have been bred before?"

Perhaps some of your readers can answer this latter question. I may add that Mr. Sim sent the three pupa cases and three specimens bred from them to Mr. Watkins, who has kindly forwarded one for my inspection.

Guestling Rectory :

August, 1897.

DESCRIPTION OF A NEW DIPTERON OF THE GENUS *PHOROCERA* INHABITING BRITAIN.

BY R. H. MEADE, F.R.C.S.

Fam., *Tachiniidæ*. Gen., *Phorocera*, R. Dsv.

Sub-gen, *Campylochæta*, Rnd., Br. et Brgm.

P. INCERTA, *sp. n.*

♂ ♀. *Oblonga subcylindrica cinerea; frons subprominens; frontalia ampla, vitta lata nigra; genæ hirsutæ; antennæ articulo tertio crasso; arista incurva, segmento secundo parum elongato; palpi nigri; thorax substriatus; abdomen fasciis transversis nigris sublunatis striatus; alæ venis transversis apicalibus flexis, et fere in apice alarum excurrentibus; pedes tibiis omnibus extra, longe setosis.*

Long., 6 mm.

Forehead rather prominent; face a little oblique; eyes hairy, widely separated in both sexes but rather nearer together in the male than in the female; frontal stripe black, and twice as wide as the sides of the frontalia, which, together with the face, are white and somewhat glistening; cheeks ciliated with fine hairs; facial setæ long, placed rather wide apart, and not many in number, but extending upwards to near the end of the frontal bristles; antennæ black with the third joint thick and about three times the length of the second; arista rather short and bent, thickened for two-thirds of its length, and having the second joint a little elongated (especially in the male); palpi small and black; vibrissæ large; thorax whitish-grey with four rather indistinct stripes, the central pair being short and narrow; dorso-central bristles three behind the suture; scutellum grey and immaculate; scales of calyptæ large and white; halteres yellow; abdomen conico-cylindrical in both sexes, grey with the first segment nearly black, and the three following ones marked with black interrupted transverse bands or marks on their hinder edges, which assume a some-

what semilunar shape; anal segments of the male small and incurved; wings clear with yellowish roots, fourth long veins bent at a rather obtuse angle; apical cross vein curved, and terminating near the apex of the wing; outer cross vein oblique and straight; legs black, tibiae all furnished on their outer surfaces with a number of long, strong, irregular bristles.

The Rev. E. N. Bloomfield sent three specimens of this fly for my inspection in July last, which had been taken at Ipswich by Mr. Claude Morley. I had also the pleasure of examining another (by the kindness of Mr. Grimshaw) belonging to the Museum of Science and Art, in Edinburgh, which was captured by the Rev. Alfred Thornley at Treswell in Nottinghamshire, and presented by him to the Museum. The Keeper of the Natural History Collection (Dr. Traquar) kindly allowed me to describe it.

The genus *Phorocera* contains a number of species which vary so much in many of their characters, that they have been separated and placed in different subgenera by Rondani and Brauer and Bergenstamm. Only one species has been referred by these authors to the sub-genus *Campylochæta*, viz., *P. schistacea*, Mgn., which, like *P. incerta*, Mde., has hairy cheeks and a bent arista, &c.; it differs from it, however, in many other characters, having pale palpi and tibiae.

Bradford: September 6th, 1897.

ON THE BRITISH SPECIES OF THE GENUS *CHRYSOPS* (FAMILY *TABANIDÆ*).

BY ERNEST E. AUSTEN.

According to Mr. G. H. Verrall's "List of British *Diptera*" (1888), our native species of the handsome but bloodthirsty flies, known as *Chrysops*, are three in number, namely, *Chrysops cæcutiens*, L., *quadratus*, Mg., and *relictus*, Mg., and the supplementary list of "Reputed British *Diptera*" contains no addition to this total. The British Museum has recently received two entirely black male specimens, which on casually glancing at them I took to be merely the common *Chrysops cæcutiens*, L. On making a closer examination, however, I at once saw that they must be distinct.

The features which first attract attention are the larger hyaline space at the apex of the wing and the much more pronounced and clearly defined transverse fenestra on the inner (proximal) margin of the transverse band. The greater extent of the clear space at the apex of the wing is due to the apical blotch ("Spitzenfleck" of Schiner) being much reduced in size, and to the fact that the outer (distal) margin of the transverse band is concave instead of convex. The transverse band does not

quite reach the posterior margin of the wing, about the last quarter of what would be its full extent being obliterated. The wing itself is considerably narrower than in *Chr. cæcutiens*, the anal angle being rounded off so that the posterior margin is more nearly parallel to the anterior. But it is on examining the face and cheeks in these specimens that the greatest difference from *Chr. cæcutiens* is seen.

In the three recognised British species of *Chrysops* there is on each side of the face below the antenna a shining black tubercle, which may or may not be united below with its fellow of the opposite side, but which is, in any case, separated by a vertical patch of yellow pollen from a small shining black fleck on the cheek (i. e., the space beneath the eye); the posterior margin of the cheek is also clothed with yellow pollen, so that the cheek-fleck is still further defined, and in fact, is often entirely surrounded by pollen. In the two male specimens which we are examining, however, the face and cheeks are wholly shining black and entirely devoid of pollinose markings, the facial tubercles being continuous with the tumid cheeks.

There seems little doubt that these specimens (for which the Museum is indebted to Captain Savile Reid, who took them on Studland Heath, near Swanage, Dorset, on August 8th, 1895) belong to *Chrysops sepulcralis*, Fab., which consequently must be added to the British List. They work out as *C. sepulcralis* both with Schiner's table ("Fauna Austriaca," *Diptera*, I, pp. 40, 41), and also with that given by Loew (p. 615) in his paper, entitled, "Versuch einer Auseinandersetzung der europäischen *Chrysops*-Arten" (Verhandlungen der k.-k. zoologisch-botanischen Gesellschaft in Wien, viii Bd., 1858, pp. 613-634). In his notes on the species Loew writes (*loc. cit.*, p. 622), "The entirely black colour of the antennæ and legs make it readily recognisable. Moreover, it is conspicuously distinguished from all other European species known to me by the fact that the shining black cheek-tubercles not only cover the entire cheeks, but also extend at the orbits high up on to the face, and there completely coalesce with the facial tubercles." This is precisely what we find in the specimens from Studland Heath. On the following page, however (p. 623), Loew appends a note which is worth translating *in extenso*; he writes—"I possess a female, taken near Königsberg in Prussia, which is either a highly remarkable variety of *Chr. sepulcralis*, or belongs to a species which has still to be described. It resembles *Chr. sepulcralis* in the coloration of the antennæ and legs, in the formation of the facial and cheek-tubercles, as well as in the marking of the wings; it is, however, somewhat larger and almost entirely clothed with black hair, so that a scanty clothing of yellowish hair is only found on the middle of the upper-side of the thorax, on the scutellum, and on the middle of the posterior margin of the second and third abdominal segments besides; in particular the otherwise uniformly black colour of the hair of the abdomen is very noticeable. I should have felt no hesitation whatever in regarding this female as a new species, had not the examination of a considerable number of male specimens of *Chr. quadratus* taught me that the colour of the hair is not constant in all species of *Chrysops*, and if the not altogether faultless condition of the solitary specimen in my collection had not warned me to be specially cautious."

Now, although Loew does not say so explicitly, it is to be inferred from this note that in normal specimens of *Chr. sepulcralis* the dorsum of the thorax and the pleuræ are clothed with yellow hair much as in *Chr. cæcutiens* or *Chr. relictus*. Schiner

says nothing about the colour of the hair, and the only description of the body of the insect that he gives is to the effect that it is—"Black, but little shining, only the posterior margins of the abdominal segments whitish." Fabricius' original description (*Entomologica Systematica*, iv, p. 374) likewise omits all reference to the hair, and characterizes the body much in the same terms as those employed by Schiner—"Corpus totum atrum, minime nitidum, immaculatum." Fallén did not know the male of *Chr. sepulcralis*, but with reference to the female he writes (*Diptera Sueciæ*, "*Tabanii*," p. 11, 4)—"Thorax niger, pilosus: pilis lateralibus subluteis." Meigen ("*Systematische Beschreibung*," ii, p. 74) says—"Body clothed with fine, silky, somewhat yellowish hairs, which are more distinct at the margins of the abdominal segments. Pleuræ clothed with reddish-yellow hairs." And lastly, Zetterstedt ("*Diptera Scandinaviæ*," i, p. 127) writes—"Totus ater, vix maculatus nisi pleuris fulvo-pilosis, segmentorumque margine fulvo-ciliatis."

Thus there seems to be a general consensus of opinion among writers whom we may call the immediate successors of Fabricius that in *Chr. sepulcralis* the pleuræ at any rate are clothed with yellow or reddish-yellow hair. I have spent some time in endeavouring to discover the opinion of more modern authors upon this point, but without much success. Pandellé ("*Synopsis des Tabanides de France*," *Revue d'Entomologie*, T. ii, 1883, pp. 165-228), who, by the way, considers (*loc. cit.*, pp. 224, 225) *Chr. quadratus*, Mg., *relictus*, Mg., and *sepulcralis*, F., to be mere colour varieties of *Chr. cacutiens*, L. (!), writes (p. 225) with reference to *Chr. sepulcralis*—"Sa pubescence est brune ou d'un gris livide." Dr. Gobert, in his "*Révision des Espèces Françaises de la Famille des Tabanida*" (*Mémoires de la Société Linnéenne du Nord de la France*, T. 5, 1883, pp. 55-105), does not mention *Chr. sepulcralis* at all.

In the specimens from Studland Heath the thorax (pleura as well as dorsum) is entirely clothed with black hair, and the only trace of yellow hairs is to be found on the abdomen, where, in the case of one of the specimens, the posterior margins of the third, fourth and fifth segments show evidences of a scanty clothing of short golden-yellow hairs, though on the third and fourth segments these are confined to the median line; on the ventral surface of this specimen the second segment alone shows scattered yellow hairs; in the other individual the second abdominal segment is the only one which shows any yellow hairs—a few on the ventral surface and above on the posterior margin in the median line. In having the pleuræ clothed with black hair our specimens agree with the description of *Chr. melanopleurus*, Wahlb. (see Zetterstedt, "*Diptera Scandinaviæ*," viii, p. 2943), whatever this may be, which Loew declares (*loc. cit.*, p. 627) he is unable to recognise in any species known to him. On the other hand, Wahlberg describes the first and second segments of the abdomen of the male of his species as being testaceous-yellow at the sides, while his description of the abdomen of the female is suggestive of the female of *Chr. relictus*.

On the whole, since our specimens agree so perfectly with the description of *Chr. sepulcralis* as regards face and wings, and taking into consideration Loew's remark on the variability of the hair in males of *Chr. quadratus* in the note quoted ^{above}, it seems to me that we shall be quite justified in regarding them merely as a variety of *Chr. sepulcralis*. They may be a local race; among British ^{specimens} difference from Continental specimens in the colour of the hair is by no

means uncommon, and when further specimens have been collected it may be found that the present case is simply another instance of this peculiarity. Loew's aberrant female referred to in the note translated above was somewhat larger than usual, but the two males from Studland Heath are in no way abnormal in this respect; they are slightly smaller than the average male of the common *Chr. cæcutiens*.

I look forward with much interest to the capture of a British specimen of the female *Chr. sepulcralis*; our Old British Collection contains no trace of the species, and, as it happens, the sole representative of it in our General Collection of *Diptera* is a somewhat imperfect female from Germany, collected nearly forty years ago, and without any nearer locality. In the wholly shining face and the shape of the transverse band on the wing, this specimen agrees with the English males; the base of the wing, except the costal margin, is hyaline, as is the case in the females of our other British species; in the coloration of the hair this female appears to be normal, the dorsum of the thorax, scutellum, pleuræ, first and second segments of the abdomen, and the posterior margins of the two following ones being sparsely clothed with short golden-yellow hairs. The specimen is rather smaller than the males from Studland Heath, measuring 8 mm. ($3\frac{1}{4}$ lines) in length.

As to the distribution of *Chr. sepulcralis*, Loew says that the species is known to extend over Scandinavia (Zetterstedt gives a number of localities), Eastern Russia, and the whole of Germany.

I append a

TABLE OF THE BRITISH SPECIES OF *CHRYSOPS*.

1. Outer margin of dark transverse band across wing concave; face (except immediately beneath base of antennæ) wholly shining, facial and cheek-tubercles confluent *sepulcralis*, F.
 Outer margin of transverse band across wing, at least anteriorly, convex; face not wholly shining; facial and cheek-tubercles on each side separated by a pollinose stripe 2.
2. Middle tibiæ black, in ♀ sometimes brownish at the base *cæcutiens*, L.
 Middle tibiæ brownish-yellow 3.
3. Second abdominal segment with a large median black blotch (♂), or small spot (♀) *quadratus*, Mg.
 Second abdominal segment with a double black blotch, consisting of two backwardly directed triangles with their bases resting on the anterior margin, where they are in contact; in ♂ 3rd abdominal segment also (frequently the 4th as well) with a wider and less distinct double blotch *relictus*, Mg.

Chrysops cæcutiens is, of course, the common species with us, and may be met with everywhere in suitable localities; *Chr. relictus* is less common, and *Chr. quadratus* is apparently rare and local. The British Museum possesses but a single male of *Chr. quadratus*, taken at Holne,

Dartmoor, by Lieut.-Col. Yerbury, July 6th, 1896; there are females in the collection from the New Forest (Col. Yerbury, July—August), and Guestling, Hastings (Rev. E. N. Bloomfield). It is stated by Schiner (*loc. cit.*, p. 41) that the wing of the male *Chr. quadratus* is "entirely brownish, the usual hyaline places being in this case only paler." Such is not the case in the male from Holne, but the males of *Chr. relictus*, of which the Museum possesses a series, have the *apex* of the wing largely infuscated, the apical blotch being continued down the posterior margin until it joins the transverse band, leaving merely a somewhat ill-defined lunate fenestra between itself and the median portion of the band. The median basal spot on the second abdominal segment of the female *Chr. quadratus* is sometimes deeply emarginate posteriorly, when it is evident that it is nothing but the base of the black furcate mark seen on the same segment in the female *Chr. cæcutiens*.

Similarly the double blotch on the second abdominal segment in both sexes of *Chr. relictus* is due to the thickening of the rami of the fork. Occasionally, in somewhat discoloured specimens, the bifid character of the blotch on the second abdominal segment of the male *Chr. relictus* cannot be made out with clearness, and the specimen might then perhaps be confused with *Chr. quadratus*; in such a case the consideration of the other characters, such as the coloration of the wing-tips and the amount of orange-yellow on the third abdominal segment, will probably lead to the correct solution of the difficulty. Of *Chr. relictus* the Museum possesses a satisfactory series of specimens, including males and females from Torcross, S. Devon, May 24th to 26th, 1893 (Lieut.-Col. Yerbury); a male from Lyndhurst, New Forest, July 4th, 1894 (Lieut.-Col. Yerbury); two females from Leenane, Co. Galway, July 14th, 1892 (E. E. Austen); and a female from Brockenhurst, New Forest, August 17th, 1893 (W. R. Ogilvie Grant).

The little band of students of British *Diptera* is slowly increasing in numbers, and doubtless the recruits are anxious for a chance of distinguishing themselves. Additions to the British List may be found elsewhere than among the *Syrphidae* or *Tachininae*, and the present paper has been written in the hope of attracting some measure of attention to one of the less popular groups.

British Museum (Natural History),
Cromwell Road, London, S.W.:
August 21st, 1897.

CILISSA MELANURA, NYL., A SPECIES NEW TO THE BRITISH LIST, AND OTHER BEES AT ST. MARGARET'S BAY.

BY F. W. L. SLADEN.

A few visits to St. Margaret's Bay this year have been productive of some rare bees, which may be worth recording.

Halictus quadricinctus, Fab.—This species occurs over a small area in company with *H. rubicundus*. It is partial to the heads of *Centaurea*. In the first week of August I met with the males on *C. scabiosa*, also a few young females in the early morning before the males were about. Towards the end of the month the females appeared in some numbers on *C. nigra*, which was growing close to the burrows.

Andrena simillima, Smith, was taken on *Eupatorium*, large clumps of which grow at the foot of the cliff. I also saw worn females at bramble flowers. The females burrow into the chalk. *A. nigriceps* occurs further along the coast, but I have not yet taken it at St. Margaret's Bay.

CILISSA MELANURA, Nyl.

Closely resembles *C. leporina*, but the ♂ has the hairs of the face white, with one or two black hairs on the inside of each eye, antennæ in that sex entirely black; thorax in the ♂ with the hairs above pale, with a slight fulvous tinge in front in fresh specimens, in the ♀ shining, the hairs pale fulvous, in both sexes the hairs are intermixed with black in the centre of the mesonotum; fore-wings in both sexes slightly broader than in *C. leporina*, their apices less acute, nervures dark piceous; abdomen subtriangular in both sexes, in the ♂ with the first and second segments clothed sparingly with pale hairs, the remaining segments sparingly with black hairs, the second, third, and fourth with a narrow apical band of short white pubescence, narrower on the fifth; in the ♀ shining, the first segment with a few pale hairs, second, third, and fourth segments with a narrow apical band of short white pubescence, apical fringe black, not very dense; terminal joint of the tarsi in both sexes nearly black; scopæ in the ♀ greyish-white, turning into black at the apex of the metatarsi.

The males of this insect were first noticed on August 10th, coursing up and down a small strip of *Bartsia odontites*, which was then coming into bloom. Mr. Saunders has kindly examined a specimen of each sex, and finds them to be referable to this species, which is new to the British list. Unfortunately I met with only one good specimen of the female. The species is closely allied to *C. leporina*, but it is distinguishable in both sexes by the more triangularly-shaped abdomen with narrower bands of shorter white pubescence, by the dark piceous nervures of the wings, and by the terminal tarsal joint of each leg, which is black, not testaceous as in *C. leporina*. The male has the antennæ longer, entirely black, lacking the ochreous hue so characteristic of fresh specimens of male *leporina*, and their joints much more arcuate.

Among other local bees taken at St. Margaret's Bay, but which I have met with elsewhere along the coast, may be mentioned the following:—*Prosopis Masoni*, Saund., appears at the foot of the cliff, first on mallow, attracted afterwards to *Achillea* and other

flowers; *Colletes picistigma*, Thoms., on chamomile flowers; *Halictus xanthopus*, Kirby, this year the males did not appear until about September 13th; *Osmia aurulenta*, Panz., nests in snail shells.

Ripple Court, Ringwould, Dover:
Sept. 14th, 1897.

NOTES ON SOME BRITISH HYMENOPTERA (No. 2).

BY THE REV. F. D. MORICE, M.A., F.E.S.

In continuation of my paper headed as above in the August number of this Magazine, I have a few further observations to offer.

Hedychridium integrum, Dhb. (Ent. Mo. Mag., June, 1896, p. 121).—I have taken two more specimens of this Chrysid at Chobham (July 13th and 15th of this year), and have now seen in all six British examples of it, of which five hail from Chobham, and one (Coll. F. Smith) is without note of locality.

Pompilus (Aporus) unicolor, Spin.—I found two males of this great rarity at Woking on July 10th, and a third in the same spot on the following day. All three were skipping over the leaves of a little oak plant by the road side near the Maybury canal bridge. Hoping to secure a female, I watched the spot for several days afterwards, but without success. However, the time was not quite wasted, as I took at intervals on the same plant several other good *Pompilidae* (especially both sexes of *Salix affinis*, V. d. Lind., and a ♀ of *Pompilus minutulus*, Dhb.), and also quite a series of the males of *Myrmosa melanocephala*, F. The latter I had seen before only on flowers, and never in any quantity; but on this occasion they almost swarmed on the oak leaves, and wholly neglected the numerous flowers (*Potentilla*, *Achillea*, &c.) which grew all round. I saw no females near, but the ground was thickly covered with vegetation, among which any number of them might have been lurking unobserved, and possibly this may have been the reason why the ♀ *Aporus* also escaped me.

Orabro (Lindenius) Panzeri, V. de Lind.—Two females of this species (new to Woking) occurred on the same occasion, not actually on the oak plant referred to above, but on flowers very near it.

Spilemena troglodytes, V. de Lind.—One ♂ (unusually large) in a gate post near Byfleet (July 1st).

Asiatus boops, Schr.—Several times in July. (once as late as 4 p.m.) I found females of this species carrying prey to their burrows in a sandy spot on Chobham Common. This prey consisted of *Sciurus*

bicolor and *Piezodorus lituratus* in a larval state. F. Smith says that he has caught this insect preying on *Oxybelus uniglumis*, L. This seems *a priori* most improbable; and though on the above and many other occasions I have seen *Astatus* and *Oxybelus* burrowing side by side in great abundance, I never could see a sign of hostility between the two species. Each seemed quite unconscious of the other's presence, though they were often close enough together to be taken in a single sweep of the net. I cannot help thinking that some accidental occurrence of this kind may have misled Mr. Smith; otherwise, his observation seems to me simply inexplicable.

Prosopis cornuta, Smith.—On August 9th I found my first British specimen (a ♀) of this extremely rare species on *Daucus carota* in a large field very near my house. This field, I regret to say, is being rapidly covered with new buildings, and will probably soon cease to be available as a hunting ground. Next day, by diligent search in the same spot, I secured three more specimens, all females. All were on *D. carota*, though *Achillea millefolium*—the plant on which Mr. Saunders took the males of this species at Hollington, near St. Leonard's—grew abundantly close by. For some reason the latter plant seemed on the present occasion quite unattractive to any kind of insect, while the carrots swarmed with *Diptera* and *Hymenoptera*. I took on them many *Pompilidæ* of various kinds, but mostly common, a few specimens of *Prosopis brevicornis*, Nyl. (all females), and many kinds of *Sphecodes*, especially *reticulatus*, Thoms., *puncticeps*, Thoms., and *similis*, Wesm.

Megachile versicolor, Smith.—Mr. Saunders has bred this bee from broom stems, and also found it burrowing in the ground. At West End, Chobham (July 30th), I caught a female in the act of nidifying in an old stump or root of gorse, which was lying quite loose on the edge of a sandpit. I picked the stump up (it was only a few inches long), and brought it home. As it appears to contain several completed cells, I hope to rear something from it next year.

The above note reminds me that last winter I gathered some bramble stems in this neighbourhood for rearing, but was not particularly successful with them. I got, however, one ♂ of *Odynerus lævipēs*, Shuck., which emerged on May 14th, two others having unluckily perished just before completing their pupation. I was also surprised to find four or five *naked* larvæ, which I had set down as *Pemphredons*, develop in a glass tube into females of *Prosopis communis*, Nyl. I had thought that all species of *Prosopis* spun cocoons, but these certainly did not do so.

Brunswick, Woking :
August, 1897.

Local Lists.—One would most certainly suppose that all workers in the broad field of British Entomology do most strenuously endorse Mr. Barrett's remarks (*ante* p. 187), and there is but one reason for not doing so, which is, that a certain school of the more advanced students of the science do but little field work. Every *Collector* loves surely to have something to go on. When he first visits a new locality his first question runs—"Is there a list of its Insect Fauna?" When told yes, he hastens to obtain a copy, in which he finds (if the list is drawn up as a list should be) every species hitherto taken there, notes as to its distribution, with exact localities and references to all works and periodicals in which it is mentioned from that particular county or district. As Mr. Adkin very justly says, accuracy is a *sine qua non*, as indeed it is throughout the whole gamut of entomological record and research, and interesting notes and quotations certainly make a reference-work more readable, but at the same time bulkier and hence less handy. Every field entomologist who cannot appreciate the value of a reliable list of the insects of the district he happens to be working, must have his bump of originality and pioneerism abnormally developed!—CLAUDE MORLEY, Everton House, Ipswich: *September 6th, 1897.*

Position of ovipositing Satyrus Semele.—It is just possible that the above may have escaped the notice of Lepidopterists, though that such is the case is, in view of their numbers, not very probable. I had great facilities for observing the females of this species during oviposition at the extreme point of Beachy Head last August, and was much struck by the peculiar and (one would think) uncomfortable position invariably assumed. The insect would fly some three yards and, alighting on the grass, remain immovable for about two minutes; then she would suddenly begin to walk till, espying a suitable blade, she seized one near. Letting herself down by muscular force, like a man on the horizontal bar, she curved her abdomen beneath her and, extending it, carefully placed a white egg on the selected stem. With a jerk she stood on her legs again and, after waiting for a moment as though to regain "breath," flapped away to the next favoured tuft of grass. The extremely backward position of the anterior wings is also notable.—ID.

London suburban Lepidoptera.—For some years London entomologists have become mournfully conscious of a great decrease in the number of species obtainable in the suburbs. Whether caused by extended building or the smoke of continually augmented numbers of chimneys, or by the ubiquitous sparrows, it has long been obvious that with increasing tree accommodation there is a sad decrease in insect tenants. It is, therefore, with some gratification that I chronicle any (even the smallest) indication of a return of species to old haunts. *Smerinthus populi* had become almost a rarity here for several years; this season the moths have been seen on the tree trunks as of old, and the larva is certainly more generally in evidence. Then *S. ocellatus*, in the larva state, has re-appeared both on willows and willows, and several larvae, wandering in search of a soft place to bury in, have been picked up in the road close to my house. No doubt they came from the willow bushes on the water-works embankment. *S. tiliæ* larvæ have also been found, but this is not a re-occupation, since the species is always resident with us. The scarcity of moths on the wing has been most extraordinary, but of this complaints come from the country

also ; it is therefore the more cheering to be able to announce that the beautiful swift moth, *Hepialus sylvinus*, has been found about this and the adjoining gardens, and that, as in Mr. Stainton's time, *Egoconia quadripuncta* has shown itself indoors.—CHAS. G. BABBETT, 39, Linden Grove, Nunhead, S.E. : September 12th, 1897.

Local Lists of British Lepidoptera.—Several additional lists have been brought under my notice since the commencement of my paper on the subject, all of which I hope duly to record ; but should like to make the catalogue as complete as possible, and shall be thankful for further help, or hints. Several friends have also made suggestions, and I hope before leaving the subject to make a few remarks respecting future work in this direction.—ID.

Sphinx convolvuli at Nunhead.—A few days ago a female of this grand moth was found in the Cemetery here by one of the workmen, and sent by the hands of his children to me. Its condition is by no means improved by the process, and it is hardly a cabinet specimen, but the occurrence of such a visitant in the outskirts of London seems well worth recording.—ID.

Drawings of Eggs of Lepidoptera.—Some drawings of extreme beauty, of eggs of *Lepidoptera*, have recently been executed by Mr. E. Wheeler, 71, Queen's Road, Clifton, Bristol. He is anxious to extend his series, and asks us to state that he will be greatly obliged to any one who will furnish him with two or three eggs of any species, more especially among the *Heterocera*.—EDS.

Lepidoptera at Poyntzpass, Armagh, in 1897.—The early part of this year was of a most unfavourable nature for *Lepidoptera*. The spring was late and wet and cold. Sallows proved a blank, but I obtained a single *Xylocampa lithorhiza* on my bedroom window. Butterflies were late in making their appearance. *Vanessa urticae* did not occur till April 18th, and *Pieris napi* not till the 26th of the same month. A spell of fine weather in May brought out *Euchloë cardamines* and *Pararge ægeria* in abundance ; the latter is remarkably plentiful here. At the end of June and during the early part of July sugar proved fairly successful ; among my captures were :—*Leucania lithargyria*, *L. comma*, *Gonophora derasa*, *Thyatira batis* (I only took a single specimen of this pretty moth, and this was the only one I saw), *Axylia putris* (also decidedly scarce), *Euplexia lucipara*, *Noctua festiva*, *N. plecta*, *N. c-nigrum* (common), *N. triangulum* (a single specimen), *N. rubi*, *Rusina tenebrosa* (quite in numbers), *Hadena oleracea*, *H. pisi*, *H. thalassina*, *H. dentina*, *Eurois adusta* (a fine series, many of them very dark), *Grammesia trilinea*, *Phlogophora meticulosa* (a solitary specimen on July 5th), *Acronycta psi*, *A. rumicis* (nice specimens, in good order ; *A. psi* also occurred on wall of house), *Habrostola triplasia* (a single specimen on July 17th). In August sugar was a complete failure, night after night the only visitants were *X. polyodon* and *T. pronuba*. While driving between this and Tanderagee I took a nice specimen of *Eubolia palumbaria*. On July 29th I captured *Crocallis elinguarica* here, and on the 30th I took a couple of *Hydrocampa nymphaelis* in marshy ground at Loughgilly. "Whites" were plentiful, and the larva of *P. brassicae* was very abundant on cabbages and Brussels sprouts, and gave

much trouble picking. I noticed with some surprise that a lot of savoys close to the attacked plants were untouched. I did not see a single *Plusia*, though I have a number of their favourite turncap lilies in my garden.—W. F. JOHNSON, Acton Glebe, Poyntzpass : September 1st, 1897.

Pieris Daplidice at Dover.—On August 27th last, while my son was taking *Lycæna Adonis* he came across a female *Pieris Daplidice*. I have shown this specimen to Mr. Sydney Webb, of Maidstone House, Dover, who confirms the identification.—A. STACEY, 34, Clarendon Street, Dover : September, 1897.

Pieris Daplidice in North Kent.—See Mr. Butler's notes on *Hemiptera*, p. 236.

Lepidoptera in Ross-shire.—Whilst staying a day or two at Gairloch, Ross-shire, early in September, I noticed the following species, which have not, I think, been previously recorded north of the Caledonian Canal, viz. :—*Acalla aspersana*—common in one locality near the shelter of some rocks on the hillside ; variable and strongly marked. *Chelaria Huebnerella*—several amongst birch, and also at Strome Ferry. *Cerostoma costella*—one on the outskirts of a small wood.—E. MEYRICK, Elmswood, Marlborough : September 6th, 1897.

Ochsenheimeria vacculella common at Brockley.—Collecting in the neighbourhood of Brockley the present month I had the good fortune to meet with numbers of *Ochsenheimeria vacculella* in the crevices of the bark on poplar, elm and willow. Judging by the number of dead insects in the spiders' webs on the trees, I conclude that it must have been most plentiful.—PERCY RICHARDS, 3, Salisbury Villas, Stuart Road, Peckham Rye Park, S.E. : September, 1897.

[It is ten or twelve years since we were startled by the sudden appearance of this hitherto rare species, in plenty, at Lewisham and elsewhere in South London. Since then it appears to have scarcely been seen. Mr. Richards' captures (which I have examined) seem to suggest that it has again been plentiful, and this is rendered more probable by the circumstance that the insect has also been found this season in Suffolk by the Rev. C. T. Cruttwell, and by a correspondent of the Rev. E. N. Bloomfield at Ipswich.—C. G. B.].

Spilomyia speciosa in the New Forest.—I was fortunate enough to secure a fine female specimen of this fly on May 12th last, in the same glade at Brockenhurst where in June, 1896, I found so many males. This and one male were all I saw this year during the fortnight I was in the Forest ; no doubt the unfavourable weather was the reason.—GERTRUDE RICARDO, 34, Kensington Mansions, S.W. : August 31st, 1897.

Note on the habits of Bombus Latreillellus.—I have recently taken several nests of *Bombus Latreillellus*, and have established them in the garden, joining two weak nests together. The males leave the nest early in August, and return to the mouth of the hole, which generally has been used by a mouse or a mole, about the middle of the month, and wait for the young queens to come out. Often a queen will peep out of the hole and run back, and the first male on the spot will follow her in. This habit occurs with no other *Bombus* I believe.

In a nest of *B. lapidarius* I found 16 female *Psithyri* in a torpid state (August 17th). There were no queens in the nest, but about 25 workers and 12 males. This nest was in a rat's hole, and contained several *Quedii* (*mesomelinus*) and a large colony of wax-moth larvæ.—W. H. TUCK, Tostock, Bury St. Edmunds: August 31st, 1897.

The parasitism of Ichneumon (Leistodromus) nycthemerus, Grav.—I have lately bred a specimen of this rare insect, whose habits were previously unknown. Both Gravenhorst and Wesmael have recorded it on the Continent, the former twice over, once as *I. nycthemerus*, and again as *I. quinque-punctatus*; it is easy to see that these two names are synonyms. Wesmael has given a good coloured figure of the species. No mention of it as indigenous occurs (I believe) except in Desvignes's Catalogue of the Ichneumonidæ in the British Museum, where a specimen may be seen; and I have never heard of any further captures. By sweeping a *Syringa* which grows on my lawn I obtained last July two green sluggish larvæ with black narrow heads, which at first puzzled me, as they had scarcely a Lepidopterous appearance. I fed them on *Syringa* for a few days, when one of them shrivelled and died; the other, after doubling its size, changed to a pupa, which I at first conjectured to be that of a *Thecla*, but doubtfully, as no *Thecla* has ever been seen in my garden. Further enquiry, however, showed it to belong to the "holly-blue" (*Argiolus*), and it agreed fairly well with Buckler's figure. This identification is confirmed by the fact that *Argiolus* is one of the common insects of the garden, flying about the holly trees, on the blossoms of which the caterpillar feeds. The two caterpillars of which I speak fell out of the *Syringa*, and were fed afterwards upon the leaves of the same tree. I should state that this *Syringa* grows so close to a variegated holly that the branches intermingle, yet not on the side where the caterpillars were found. The larva of *Argiolus*, then, will certainly feed upon *Syringa* as well as upon holly and ivy. In about a month I found that the surviving chrysalis had produced the handsome parasite above named, remarkable for the five yellow spots on its abdomen (*quinque-punctatus*, Grav.).—T. A. MARSHALL, Botusfleming, Cornwall: September 2nd, 1897.

Encyrtus bred from Depressaria heracleana.—On reading Mr. Douglas's note at p. 212 of this vol., I am reminded that I collected last June a number of these larvæ from the flower heads of *Heracleum giganteum*, with a view of obtaining parasites. About twenty passed through their changes and became moths, the last six were parasitized. Their enemy was a minute *Encyrtus*, the specific name of which I cannot pretend to give. It infests each larva in prodigious numbers. The victims when about to perish become of a brighter yellow, without the bluish or greenish tinge which belongs to healthy subjects. They crawl away from their nests in the tops of the umbellate plants, and fix themselves at random about the breeding cage. In a day or two they are found dead, elongated and swollen; their semi-transparent cuticle shows their inside to be crowded with pupæ of *Encyrtus*, packed as closely as grains of corn in a sack. A fortnight suffices for the development of these parasites, which emerge to the number of 100 or more from each larva. The stiff empty skin preserves the form and, in many cases, the colours of life, much resembling an artificial preparation. The facts of this case are entirely conformable

to the observations of Prof. Bugnion relative to the development of another species of *Encyrtus* from a *Hyponomeuta*. The book is inaccessible to me just now, but the figure there given of a *Hyponomeuta* larva stuffed with *Encyrtus* pupæ might serve (*mutatis mutandis*) for that of the *Depressaria* above noticed.—*Id.*

Coleoptera from Hoy, Orkney.—The following is a list of the contents of a small bottle received through the kindness of Mr. W. L. Greening, of Warrington, and collected in the Island of Hoy during the summer of 1895. The list contains no unexpected names, nor any special rarities, and is only interesting as representative of the Coleopterous fauna of part of the extreme northern limit of the British Islands. The captor not being a Coleopterist it may be assumed that the species enumerated were abundant on the occasion of his visit. *Cicindela campestris** (dark form), *Carabus glabratus*, *C. arvensis**, *C. catenulatus* (very small), *Nebria brevicollis*, *Clivina fessor*, *Taphria nivalis*, *Calathus mollis*, *C. micropterus*, *Amara bifrons*, *Bembidium littorale*, *Ocypus olens*, *Quedius tristis*, *Xantholinus glabratus*, *Simplocaria semistriata*, *Athous niger*, *Chrysomela sanguinolenta**, *Apion Spencei*, *A. hamatodes*, and *Otiorrhynchus blandus*, the last the most abundant of them all.—W. E. SHARP, Ledsham, Cheshire: August 30th, 1897.

Bothynotus pilosus and other *Hemiptera* in North Kent.—While collecting on August 27th in some woods between Herne Bay and Canterbury, I had the good fortune to take a fine specimen of the rare Hemipteron, *Bothynotus pilosus*. It was a brachypterous ♀, and was obtained by sweeping amongst long grass by the side of a path in the wood. This capture is interesting as giving a new locality for the insect intermediate between those in Sussex and Norfolk from which it has previously been recorded. Other interesting captures during August were *Corizus capitatus* by sweeping and *Pilophorus cinnamopterus* plentifully on young fir trees in the same woods; *Teratocoris antennatus* plentiful in all its stages and in both sexes in a marsh amongst *Scirpus maritimus* at Hampton, near Herne Bay; *T. Saundersi* (chiefly females) plentiful amongst long grass, and especially *Juncus compressus*, in a salt marsh near Whitstable; *Cyrtorrhinus flaveolus* much less commonly in the same place; *Henestaris halophilus* in profusion in a salt marsh at Swalecliffe, and *Peritrechus nubilus* in a marsh at Hampton, chiefly in the folds of a piece of tarred canvas, which was evidently its head quarters, as it contained large numbers of exuvæ; *Plagiognathus albipennis* on *Artemisia*, *Myrmedobia distinguenda* in thatch, and one developed ♀ of *Nabis flavomarginatus* by sweeping, at Swalecliffe. *Chorosoma Schillingi* and *Allodapus rufescens* were also present in small numbers in the Swalecliffe marsh, and *Monanthia dumetorum* was common in hedges. One morning, while on my way down to the sea for a dip, I saw a beautiful specimen of *Pteris Daplidice* settle on a flower just in front of me, but having at hand no better appliances than a beetle net and a straw hat, I managed to miss it, and it sailed away to be no more seen.—E. A. BUTLER, 39, Ashley Road, Crouch Hill, N.: September 13th, 1897.

Query respecting Acanthia ciliata, Eversmann.—Under this name, in the "Bulletin de la Société Impériale des Naturalistes de Moscou," 1841, p. 9, Dr.

* These species have also been found in Hoy by Mr. McArthur. —G. C. C.

Edouardo Eversmann described and figured a species of house-bug which, although admitted as a distinct species, does not appear to have come under general notice, and in Britain there is no mention of it by any author. Fieber, in his "Europaischen Hemiptera," p. 15 (1861), quotes Eversmann's description, but except saying "In Russland," makes no remark, and he does not appear to have known the species. Flor, in his "Rhynchoten Livlands," does not allude to it. Now that attention is being directed to the different species of *Acanthia* (or *Cimex*, as some still prefer to call the genus), it seems desirable that the claims to recognition of this species, in Britain at any rate, should not be forgotten or overlooked. Eversmann's description (in Latin) as to the chief characters is to the following effect:—"Much smaller than *A. lectularia*. Body broadly ovate (length, $1\frac{1}{2}$ times the breadth), flat, rugulose, greyish-red, opaque, covered with grey or lutescent hairs, and laterally ciliated with longer hairs. . . . Antennæ 4-jointed; 1st joint short, clavate; the other three joints of nearly equal length to each other, cylindrical, but the 2nd a very trifle longer and thicker than either of the others. Clypeus quadrate, rounded in front. Thorax transverse, in front broadly emarginate, the lateral margins very slightly elevated, subparallel, anteriorly deflected. Abdomen roundly elliptic. Rostrum as long as the thorax, triarticulate, joints of equal length.

"This *Acanthia*, which in some years has appeared in many houses of the City of Kazan, differs from *A. lectularia* not only in form but also in its habits; it does not inhabit socially in chinks and joints of the bedsteads, like *A. lectularia*, but walks about singly and slowly on the walls and bed-coverings, always appearing as if torpid with cold. Its puncture of the human body produces large and persistent tumours, it is also more painful than the puncture of *A. lectularia*, which is easily accounted for by its longer proboscis."

It would be of interest to know if this species still exists in Kazan only, or if, considering the difficulty of disestablishing *Acanthia*, it is not only prosperously domiciled there, but has also extended its ravages into other towns and countries. And yet, except reported on by an entomologist, how is it to be guaranteed whether the settlers or migrants (as the case may be) are *ciliata* or *lectularia*, or if the honours of the situation are equally divided between the species? Possibly some competent brother will note and reply.—J. W. DOUGLAS, 153, Lewisham Road, S.E.: August 20th, 1897.

A hint as to breeding wood-feeding insects.—Many years ago my lamented friend Mr. Stainton was in the habit of receiving wood-feeding *Micro-Lepidoptera* from Herr Mühlig, of Frankfurt a/M, who obtained them from a friend, a Coleopterist, in that city, whose name I never heard. This entomologist was the possessor of a glasshouse, but whether it was specially constructed or only a disused greenhouse, I never knew, nor does it particularly matter. During the winter he obtained from the neighbouring forests a supply of dead or decaying wood, and stored it in this glasshouse in question, not allowing it to become too dry. During the season for the emergence of the perfect insects the house was kept constantly closed, and the insects that came out were readily captured on the glass. In addition to *Coleoptera* there were of course many other insects, and being in need of species of the genus *Rhaphidia* (which preys upon wood-feeding larvæ), I induced Mr. Stainton to try and obtain some from his correspondent. The first attempt I well remember was not

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as possible, a knowledge of their parasitic enemies, so that these might be utilized as checks if haply they could be introduced in sufficient numbers with their hosts. The collection of Coccids which he obtained was forwarded to Washington, where Dr L. O. Howard has been for some time engaged in the systematic study of insect parasites. It was necessary to ascertain as accurately as possible the generic and specific positions of the Coccids collected, and with this view specimens of each were forwarded to me for identification. On the whole, more than a hundred parcels were sent to me, some of them containing large numbers of specimens, and I have been able to identify the majority of these, completing the work by about the end of June in this year. In some cases, on account of injury from mould or other fungus, or from destruction by insect parasites, I found it impossible to make sure of the specific characters; but the great majority were in a condition to give sufficient clearness, and the list which I here give shows the result.

There are only about thirty insects in the collection which I can consider as new species, or new varieties of known species. In these cases I am giving here a brief general account, in order that Dr. Howard (to whom I have already sent their names) may, if he possesses their parasites, employ these names without the necessity of referring to them as "MS.," a thing which is always to be avoided if possible.

Each parcel of specimens sent by Mr. Koebele (with a few exceptions) was marked with a number; and in this list I have noted each, with the attached letter K. The numbers were not consecutive, and I suppose represent their position in Mr. Koebele's general insect collection. In nearly every case the food-plant is also given, with the locality. A few of these insects have been mentioned by me in my paper of 1896, lately published in vol. xxix of the Transactions of the New Zealand Institute.

LIST OF SPECIES.

ASPIDIOTUS aurantii, Maskell (K. 1124, 1364 (?), 1506): on *Citrus*, *Ficus*, *Palm*, a "spiny shrub," and two unnamed plants, Hong Kong, Formosa. I am not absolutely sure about No. 1364.

Aspid. camellia, Boisduval (*A. rapax*, Comstock), (K. 1551): on *Cercis siliquastrum*, Amoy.

Aspid. cydonia, Comstock (K. 1116, 1547): on *Casuarina*, Sandwich Islands, and on *Hibiscus*, Hong Kong.

Aspid. cydonia, Comstock, var. *tecta*, var. nov. (K. 1561): on "*Ohia*," Sandwich Islands. A variety in which the insect agrees with the type, but the puparium is flatter and is subcortical, with a covering of bark-cells.

Aspid. dictyospermi, Morgan (K. 1528): on *Erythrina indica*, Hong Kong. A slight variation from the type, but the differences are unimportant.

Aspid. destructor, Signoret (K. 1804) : on *Pandanus*, Formosa.

✓ *Aspid. fideis*, Riley (K. 1514) : on *Machilus Thunbergii* and *Quercus cuspidata*, Japan ; on (?), Formosa.

Aspid. implicatus, sp. nov. (K. 1498) : on *Campanula* (?), Formosa, the plant-name is indistinct. Very minute ; puparium white, circular, convex ; pellicles inconspicuous ; entangled amongst the hairs of the plant. The spinnerets variable ; in some specimens wanting, in others only five, in three groups.

Aspid. longispina, Morgan (K. no number) : on "*Kukui*," Sandwich Islands.

✓ *Aspid. secretus*, Cockerell, var. *lobulata*, var. nov. (K. 1513) : on *Bambusa*, Japan. In this variety there is a small lobe on each side of the terminal median lobe.

✓ *AONIDIA elaeagnis*, sp. nov. (K. no number) : on *Elaeagnus macrophylla*, Japan. The puparium is very small, reddish-brown, very slightly convex ; pellicle yellow. The abdomen ends in very irregular projections, something like those of *A. corniger*, Green, but less conspicuous.

✓ *DIASPIS amygdali*, Tryon (K. 1127, 1220, 1221, 1410) : on *Rhus* and *Burdock*, Hong Kong ; on *Oriza japonica*, Japan ; on *Oleander*, Amoy ; on *Loranthus*, Ceylon. The pellicles in many of these specimens are very dark red, and I am inclined to make them var. *rubra* ; others are more like a form which Mr. Green originally named *geranii*, afterwards merged in the type.

✓ *Diasp. rosæ* (Sandberg), Signoret (K. 1265, 1477, 1480, 1502, 1524, 1537, 1540) : on *Elaeagnus macrophylla* and *Trachelospermum jasminioide*, Japan ; on *Ailanthus glandulosus*, Swatow ; on *Cycas* and *Cinnamomum*, Hong Kong ; on *Myrtus*, China ; and on *Actinodaphne*, Hong Kong.

✓ *Diasp. rosæ*, Sandberg, var. *spinosa*, var. nov. (K. 1545) : on *Smilax*, Japan. Differs from type in the browner colour of the adult female and in the more numerous spines on the abdomen. The pellicles are yellow. I do not at present think that this is the same as *Diasp. fagrae*, Green, an insect in Ceylon.

✓ *PARLATORIA proteus*, Curtis (K. 509, 1130, 1514, and two without a number) : on *Citrus*, Canton ; on *Myrtus*, Macao ; on *Citrus* and *Camellia*, Formosa ; on *Camellia* and *Machilus*, Japan.

✓ *Parl. proteus*, Curtis, var. *virescens*, Maskell, 1896 (K. 1255, 1272, 1429) : on *Rose*, Japan ; on "*liliaceous plant*," Formosa ; on *Pyrus sinensis*, Hong Kong.

Parl. sinensis, sp. nov. (K. 1571) : on *Orange*, Hong Kong. Puparia completely encrusting the twigs and massed together. Abdomen of female exhibiting the generic fimbriated hairs, but these are very much less numerous than in any reported species.

Parl. zizyphi, Lucas (K. no number) : on *Citrus* and *Psidium*, Formosa.

✓ *MYTILASPIS citricola*, Packard (K. 1202, 1535, 1548) : on *Taxus cuspidata* and probably on *Quercus*, Japan ; on an unnamed plant (*Citrus* ?), Amoy.

† *Mytil. pallida*, Green (K. 1516) : on *Willow*, Japan. Probably a var. of *M. citricola*.

✓ *Mytil. Crawii*, Cockerell (K. 1515) : on *Quercus*, Japan.

↓ *Mytil. Crawii*, Cockerell, var. *canaliculata*, Maskell, 1896 (K. 1229) : on *Quercus*, Japan. A form differing only very slightly from *M. Crawii* is on *Machilus Thunbergii*, Japan (K. 1514).

Mytil. flava, Targioni-Tozzetti, var. *hawaiiensis*, Maskell (K. 1133) : on *Pyrus sinensis*, Amoy.

Mytil. Gloverii, Packard (K. 1530) ; on (?), Hong Kong.

Mytil. pomorum, Bouché (K. 1490, 1499, 1533) : on *Ailanthus glandulosus* and *Stillingia sebifera*, Hong Kong. I believe this identification to be correct, but have not yet definitely fixed it.

Chionaspis brasiliensis, Signoret (K. 1407) : on *Thea*, Formosa. In my paper of 1896 I agree with Mr. Newstead's proposal to attach this as a variety to *C. aspidistra*.

Chion. eugenia, Maskell (K. 1389) : on *Palm*, Hong Kong.

✓ *Chion. eugenia*, Maskell, varieties (K. 1227, 1406, 1517, 1544, 1549) : differing slightly from the type ; 1517 is a small form, 1496 and 1549 have larger lobes ; on grass, Hong Kong ; on *Quercus acuta* and *Celtis occidentalis*, Japan ; and on *Myrtus*, Amoy.

✓ *Chion. graminis*, Green (K. 1470) : on *Bambusa tessellata*, Japan.

✓ *Chion. prunicola*, Maskell (K. 1484) : on *Eugenia*, Japan.

✓ *Chion. vitis*, Green (K. 1414) : on *Machilus velutinus*, Japan.

NOTE.—Pending the publication of Mr. Green's Part II of his book on the *Coccide* of Ceylon, the foregoing identifications of his species of *Chionaspis* are more or less uncertain, but are probably correct.

Ischnaspis filiformis, Douglas (K. 1482) : on *Palm*, South Australia.

✓ *Poliaspis pini*, sp. nov. (K. 1494) : on *Pinus densiflora*, Japan. Puparium white, narrow ; abdominal lobes very small.

Fiorinia bambusæ, sp. nov. (K. 1534) : on *Bambusa Fortunei*, Hong Kong. Second pellicle exceedingly elongated and narrow, thin and translucent, with an irregularly serrated margin, and small lobes. Adult female very elongated, with two terminal lobes.

Fior. camellia, Comstock (K. no number) : on *Citrus* and *Psidium*, Formosa.

Fior. camellia, Comstock, var. *minor*, Maskell, 1896 (K. 1431) : on *Ficus*, Amoy, and *Camellia*, Formosa.

Fior. nephelii, sp. nov. (K. 1417) : on *Nephelium longana*, China, Queensland, Formosa. Insects inhabiting minute pits in the leaf. Puparia very small, brownish, the pellicles yellow. Adult completely enclosed by the second pellicle, and very difficult to extract. Second pellicle terminating with a median depression, the sides of which are minutely serrulate. Adult female ending in a deeper depression without serrated sides. Larva with many longish marginal spines.

Fior. pinicola, sp. nov. (K. 1529) : on *Pinus sinensis*, Hong Kong, and *Cupressus juniperinus*, Formosa. Puparium yellowish-white, elongated ; second pellicle with margin of abdomen wavy, having a few spines, and ending with a median depression. Adult with a similar terminal depression, and a few spines and oval pores. Larva without marginal spines.

✓ *Fior. signata*, sp. nov. (K. 1495) : on *Bambusa tessellata*, Japan. Puparium broadly pyriform, transversely striated. Second pellicle broadly elliptical, abdomen ending with irregular striations and spines. Adult female ending with very inconspicuous lobes and serrations, and also with some spines.

✓ *Fior. tenuis*, sp. nov. (K. 1510) : on *Bambusa*, Japan. Puparia usually massed

close to junction of a leaf with its stalk ; very small, whitish. Second pellicle very thin, hard and brittle, almost enclosing the adult. Adult extremely small, yellow, ending with a very irregular spiniferous margin and almost obsolete lobes. The larva bears some short conical spines on the cephalic margin, like spikes.

✓ *CERONEMA japonicum*, sp. nov. (K. 1476, 1478) : on *Ilex crenata*, Japan. The general characters are Lecanid, but the conical spinnerets which produce the characteristic curling white waxy secretion are not submarginal (as in the type species *C. banksia* in Australia), but are arranged longitudinally on the median dorsal region ; consequently the secretion curls outwards towards the margin instead of inwards as in *C. banksia*.

LECANIUM coffea, Walker (K. 1224) : on *Gardenia florida*, Formosa.

Lec. fides, sp. nov. (K. 1349) : on *Ficus*, Swatow. Adult female yellowish-brown or brown, elliptical, rather convex. Antennæ of eight joints. Epidermis with some oval spots. This form is allied to *L. anthurii*, Boissduval, and to *L. minimum*, Newstead, but differs sufficiently. As regards *L. terminalia*, Cockerell, I find no mention of the antennæ.

Lec. geometricum, Green (K. 1434) : on *Laurus canariensis*, Hong Kong.

Lec. globulosum, sp. nov. (K. 1541) : on *Stillingia sebifera*, Hong Kong. Adult female sub-globular, brownish-yellow or yellow. Antennæ short, of seven joints ; feet slender and short. The distinctly Lecanid characters of the larva separate this from *Kermes*.

Lec. hesperidum, Linn. (K. 1560) : on *Carica papaya*, and on "Ohia," Sandwich Islands.

Lec. longulum, Douglas (K. 1506) : on *Ficus*, Swatow.

✓ *Lec. notatum*, sp. nov. (K. 1475, 1478) : on *Thea*, on *Ilex crenata*, and on *Pittosporum*, Japan. Adult female brown, elliptical, flattish, with a dorsal longitudinal carina. Antennæ with eight joints. On the dorsal carina there are two longitudinal rows of small irregularly polygonal cells, quite different from the conical spinnerets of *Ceronema japonicum*. Male yellow, with rather long terminal spike.

Lec. oleæ, Bernard (K. 163) : on *Vine*, Hong Kong.

✓ *PULVINARIA psidii*, Maskell (K. 1277, 1373, 1504, 1507, and two without a number) : on *Citrus*, Hong Kong and Formosa ; on *Citrus*, *Pittosporum*, and *Eurya japonica*, Japan.

✓ *PROSOPHORA quercûs*, Cockerell (K. 1281) : on *Quercus cuspidata* and *Quercus salicifolia*, Japan.

✓ *PLANCHONIA delicata*, Green (K. 1495) : on *Bambusa tessellata*, Japan.

✓ *Planch.*, sp. indeterminata. (K. 1558) : on *Quercus*, Japan.

ERIOCOCCUS exiguus, sp. nov. (K. 1525), on ?, Hong Kong and Formosa. Extremely minute : sacs yellowish or whitish, entangled in the hairs of the plant, and very loosely felted.

Erioc. graminis, sp. nov. (K. 1523, 1546) : on *Grass*, Hong Kong. Sacs pure white, elliptical, felted. Adult female dull greenish-brown ; antennæ with six joints, feet normal. Dorsum bearing a good many slender and shortish spines. Allied to *E. pallidus*, Maskell.

✓ *DACTYLOPIUS*, sp. indetermin. (K. 1592): on *Grass*, Japan. All antennæ and feet being broken off, the species cannot be fixed.

Dact. ceriferus, Newstead (K. 1553): on *Psidium*, Hong Kong.

Dact. cocotis, Maskell (K. 1562): on *Hibiscus*, Hong Kong. There is a slight variation in the antennal formula which may perhaps at a future time separate this.

Dact. graminis, Maskell (K. 1501): on *Grass*, Hong Kong. This determination is subject to future revision.

✓ *SPHÆROCOCCUS* (P), sp. indetermin. (K. 1492): on *Populus tremula*, var. *villosa*, Japan. Insect semiglobular, intense dull black in colour, so extremely hard as to resist prolonged boiling; on turning it over only a hard black flat plate is visible, without organs, but the atrophied feet can be made out. On the dorsal region are six small pits. The earlier stages were not sent, and the genus is for the present left uncertain.

Sphær., sp. indetermin. (K. 1515): only two specimens, clearly of this genus, with small test of yellow wax; on *Quercus*, Japan.

Sphær. graminis, sp. nov. (K. 1520): on *Grass*, Hong Kong. Insects covered by sacs of white cotton (similar to that of *Eriococcus*). Adult female dark brown, globular, losing feet and antennæ. Abdomen ending in a small depression. Epidermis covered with numerous circular spinnerets.

✓ *Sphær. parvus*, sp. nov. (K. 1521): on *Cherry*, Japan. Insects covered by very loose cotton almost forming distinct sacs. Antennæ and feet wanting. Epidermis with a few scattered spinneret orifices.

✓ *Sphær. tokionis*, Cockerell (K. 1259): on *Bambusa*, Japan.

ICERYA seychellarum, Westwood (K. no number): on *Citrus*, Formosa.

✓ *TACHARDIA decorella*, Maskell (K. 1532, 1539): on *Gardenia florida*, Hong Kong.

In addition to the foregoing, the collection included the following insects, not *Coccidæ*:—

Family *PSYLLIDÆ*; genus *TRIOZA*. Pupæ only of a species of this genus, in small pits on leaves of *Camphor*, Japan. The number on the parcel is indistinct.

Family *ALEURODIDÆ*; genus *ALEURODES* (K. 1130): on "climbing plant," Japan. Very minute black pupæ of this genus, with white fringe.

In my paper of 1896 (Trans. N. Z. Inst., vol. xxix) I reported the following species from Mr. Koebele's collection:—

Aspidiotus Rossi.

Asp. flocks.

Asp. destructor.

Asp. setiger, sp. nov.

Diaspis amygdali.

Parlatoria proteus,

var. *virescens*, var. nov.

Parl. sisyphi.

Mytilaspis Crawii,

var. *canaliculata*, var. nov.

Chionaspis theæ.

Chion. eugeniæ.

Fiorinia camelliæ, var. *minor*, var. nov.

Ceroplastes rubens, var. *minor*, var. nov.

Eriochiton cajani.

Mallophora sinensis, sp. n.

Dactylopius ceriferus.

Monophlebus Burmeisteri.

Wellington, New Zealand:

July 20th, 1897.

SOME REMARKS ON THE CHARACTERS OF *ADALIA*, Muls., AND
COCCINELLA, LINN.

BY BERTRAM G. RYE, F.E.S.

Mulsant (Spec. Col. Trim., p. 36) and Fowler (Col. Brit. Islands, iii, p. 158) separate these genera by the form of the coxal lines on the first segment of the abdomen, and the shape of the prosternum between the anterior coxæ. Crotch (Revision of the *Coccinellidæ*, p. 105) leaves *Coccinella* uncharacterized.

Of the characters mentioned by Mulsant and Fowler the form of the coxal lines appears to be the only reliable one upon which any division can be based; but this has been rather ambiguously expressed, and, when taken with the prosternal structure, it is almost impossible to determine the genus of but very few of the species I have examined.

In the genus *Adalia* the prosternum is stated to be rounded and smooth, but unfortunately this is not the case in *A. bipunctata*, which has it distinctly flat and with a short carina at the apex. In *Coccinella*, however, it is flattened, and usually shows traces of at least two carinæ.

Nevertheless, the two genera may be separated without much difficulty by the form of the coxal lines, except in immature specimens, when the shrinking of the abdomen makes the tracing of the lines rather uncertain.

The following table will explain the differences between the two genera:—

Coxal lines on the first abdominal segment semicircular and continued to the side margin, never reaching below the middle of the segment, sometimes slightly evanescent towards the margin *ADALIA*, Muls.

Coxal lines straight or slightly curved, and terminating on the apical margin of the segment, never continued to the side *COCCINELLA*, Linn.

In some of the species of the genus *Coccinella* there is a slight depressed line that in some lights looks like a continuation of the raised coxal line, but on close examination it will be found that it terminates before it reaches the coxal line. This fact has no doubt given rise to certain varieties of *C. hieroglyphica*, L., being mistaken for the var. *fenestrata*, Weise, of *A. oblitterata*, L.

From a study of these characters it will be found that *C. 10-punctata (variabilis)* must be placed in the genus *Adalia*, and it will also raise the question whether *A. bothnica*, Payk., is not a variety of that species.

212, Upper Richmond Road, Putney, S.W.:

September 1st, 1897.

HINTS ON COLLECTING ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F. L. S.

(Concluded from page 180).

In the last part of my notes I mentioned *Rophites* as having been taken by Mr. Bloomfield in his garden at Guestling; this is incorrect, as it was captured in the wood near his house on *Centaurea nigra*; how I got it into my head that it was taken in his garden I do not know, but I am glad to be undeceived, as I always felt a little doubtful as to whether it might not have been introduced somehow with some foreign plant. In the locality where it occurred, which I know personally well, any chance of importation from abroad is almost precluded.

The species of *Megachile* are to be found throughout the summer, the earliest appearing about the beginning of June, although July is probably the best month for them. They seem chiefly to frequent thistles and bramble flowers, but I have found *versicolor* visiting *Lotus corniculatus* in some numbers; this was in the very early season of 1893, when the hot weather had no doubt tempted them out before either brambles or thistles were in good flower, and later in the year I have found it on thistles. *M. argentata* occurs as a rule near the coast, and as it lines its burrows with the petals of *Lotus* it probably visits that flower also for pollen. There is only one very rare species of this genus in Britain, viz., *M. ericetorum*; this has not occurred since Smith's time, who captured a ♂ and ♀ at Weybridge in 1844. I have kept a sharp look out for it in this neighbourhood for many years, but have not seen anything that even looked suspiciously like it; it is a very distinct species, and recognisable at once by the band of pale pubescence widening at the sides of the abdominal segments. Several of the species of *Calioxyys* occur with those of *Megachile*, and like them visit bramble flowers, thistles, &c. In this country *C. vectis* seems to associate with *M. maritima*, *rufescens* and *elongata*, so far as I have observed, with *M. circumcincta*; but on the continent Friese says the former occurs with species of *Anthophora*, and he mentions *C. quadridentata* as an associate of *Anthophora parietina*. Near Chobham I have taken *quadridentata* on a bank, where earlier in the season I have found *Anthophora retusa*, so that I suspect it is associated with the latter species in this country. *Anthidium manicatum* could be looked for on *Lamium purpureum*, and other Labiates; its habit of stripping the stems of plants with its mandibles of their woolly

coating is a very interesting one to watch ; although a local insect, it is abundant in some localities, and the very much larger size of the ♂, in comparison to that of the ♀, is very striking. The three species of *Stelis* are all rare, *aterrima* is the least so, and *8-maculata* the rarest ; they associate with species of *Osmia*, the latter with *O. leucomelana*, from nests of which species in bramble stems it has been bred ; *aterrima* and *phæop'era* associate with *O. fulviventris*, and are also taken occasionally at flowers. I have found *aterrima* on the tall garden *Veronica*, and have received *phæoptera* several times from Mr. W. H. Tuck, who takes it round the burrows of *Osmia* near Bury St. Edmunds.

Chelostoma florissomne and *campanularum* both burrow in wood, and neither of them is rare ; the former is found in May and June, and the latter, which frequents the flowers of the harebell, in June, July, and August. Of *Heriades* very little is known in this country. Brentford (Kirby) and Dulwich (Ingall) are the only localities recorded. I have pointed out in my "*Hymenoptera Aculeata*," p. 311, the doubtfulness of the second locality. The species is a wood burrower, so should be looked for round posts, dead trees, &c. Most of the *Osmias* occur in June, and several are very rare ; *bicolor* and *aurulenta* make their nests in old snail shells ; *cærulescens*, *fulviventris*, and *pilicornis* in wood, although the former sometimes burrows in hard banks ; *rufa* usually in the mortar of walls, &c., but sometimes in banks, snail shells, or wood, in fact no sort of locality seems to come amiss to it ; *xanthomelana* makes its cells at the roots of grass ; *parietina* under stones, &c. ; *leucomelana* in bramble stems or banks ; *bicolor* occurs in chalky and limestone districts ; *parietina* is very rare, and only occurs in mountainous and limestone districts ; *xanthomelana* appears to be very local, but has been found in recent years in the Isle of Wight and in Gloucestershire, and several older localities are recorded for it ; the others are pretty generally distributed, although *leucomelana* and *spinulosa* are not recorded from the north. *Ceratina*, which could hardly be overlooked on account of its steel-blue colour, appears to be strangely scarce in this country ; a good many localities are recorded for it, and yet I have scarcely seen any specimens taken in recent years ; Mr. Harwood, of Colchester, meets with it, but I do not know of any other collector who takes it ; it visits the flowers of *Echium*, and nests in bramble stems. *Eucera longicornis* is another bee which no one could overlook, although they might wonder to what genus its female belonged ; it is local, but abundant in many localities,

appearing in May; I have found it in numbers at Chobham on *Sarothamnus scoparius*, accompanied by its inquiline *Nomada sexfasciata*. The long antennæ of the males can be seen easily when the insects fly.

There are two species of *Anthophora* which appear in the summer, *furcata* and *quadrinaculata*, the former is not a common insect, but is widely distributed over the southern half of England; the latter is very local, but not uncommon where it occurs; both have a very high pitched note when flying, and visit labiate plants, such as *Lamium purpureum*, &c.; *furcata* makes its cells in decayed wood, *quadrinaculata* in banks, &c. *Saropoda bimaculata* has also a very shrill hum, and is a most active little bee, darting from flower to flower with great rapidity; the eyes of the male are particularly beautiful, being of a pale greenish tinge with darker spots, which seem to show through from a deeper level; it is abundant in many localities, especially in sandy places, such as Chobham, &c. It is scarcely distinguishable generically from *Anthophora*, and Friese, in his Monograph of that genus (which he calls *Podalirius*), includes *Saropoda* therein. In July and August the males of most of the species of *Bombus* and *Psithyrus* appear, as also those of *Halictus* and *Sphecodes*, in fact August or early September is the best time for collecting the species of these genera, as the sexes may then be found together, whereas in the early part of the year only the hibernated females appear, also the specimens are in their best condition at this time of year, having only recently emerged. The female *Halicti* are not now to be found so frequently at flowers, but are seen round their burrows; the males, on the other hand, often swarm on thistle heads, &c., especially those of *cylindricus* and *albipes*; the great similarity of the species makes them very difficult to study, and still more difficult to recognise in the field. There are two very rare species of *Bombus* to be looked for in this country, *pomorum* and *Cullumanus*, the former has only occurred at Deal, the latter at Southend; *pomorum* is coloured somewhat like *lapidarius*, but the abdomen is clothed with hairs which gradually shade from black at the base into brownish-red at the apex, whereas in *lapidarius* the division between the black and red is clearly defined. *Cullumanus* resembles *pratorum*, but the posterior metatarsi are fringed with much shorter hairs, and the face of the ♀ is broader and squarer. Neither of these rarities has been recorded for many years as having been found in this country. *Bombi* and *Halicti* may sometimes be found as late as the end of October; I remember well taking a consider-

number of species of both genera on the East Cliff, Hastings, on the 1st of that month, but then the weather was unusually warm and

sunny. In August and September most of the ants belonging to the *Myrmicidæ* swarm, and a look out for the winged forms should be kept. These are often picked up in the sweeping net when searching for *Coleoptera* and *Hemiptera*. As a rule, after the middle of September it is not worth while to go out specially for Aculeate *Hymenoptera*, unless the weather is particularly favourable.

I will conclude these notes with a few remarks on preparing and storing specimens after they are safely brought home. If the object of the collector is thoroughly to know the creatures which he is dealing with, then his first endeavour should be so to prepare his specimens that he can freely examine every part of them; fortunately for those to whom time is an object, this preparation is very simple; the specimens may be either pinned through the mesothorax, leaving the wings and legs to arrange themselves, or they may be glued on to narrow points of card, so that only a very small part of the under-side of the thorax is hidden; for small species I think the latter plan is certainly the best, as a pin, however fine, often almost destroys the mesonotum and renders any examination of its sculpture practically impossible; whereas if the card is cut into quite a sharp point, and the insect poised just at the apex, only an infinitesimal part is hidden, and if turned on one side this even is of no consequence, as the other side will be exposed. Care should be taken when possible to open the mandibles and stretch out the tongue, and also to extract the armature of the ♂ specimens, which may be done (easily after a little practice) by inserting a fine needle at the apex of the body. Much as one may admire the symmetry of beautifully "carded" specimens, one is obliged to condemn them as unscientific, as one cannot examine either the mandibles, or the under-side, or the sides of the thorax under the wings, nor, as a rule, can one get a good view of the claws, as they are generally more or less clogged with gum; all these parts present valuable specific characters, and to hide them renders the determination of the specimens often absolutely impossible. Some entomologists pin their captures and spread out the wings as is done in the case of butterflies and moths; even this, I think, is objectionable, as the extended wing prevents a strong lens from approaching the mesopleuræ near enough to be used. To make a collection look nice should, I think, be an object with every collector, but one cannot too strongly urge the importance of sacrificing everything which hinders practical scientific examination. It is a great advantage to get the specimens high up on the pins, by this method more room is left for labels beneath, and the insects are less liable to

be eaten by mites, &c., which do not find it easy to walk up the pin, also a strong lens can be brought to bear on the thorax, which is impossible if the pin projects far above the surface of the insect. Long fine pins are most difficult to manipulate; it is therefore better, when a fine pin is required to use a short one and to "stage" it, *i. e.*, to pin it through a piece of card and then put a long strong pin through the latter.

By this method all one's specimens, large and small, can be brought up to one level, and thereby examination is materially assisted. The pins I use for small species are the finest made for "*Micros*;" silver pins should be employed, if possible (as they will not verdigris), but they are so expensive that their use is almost prohibitory; for large species and for cards I use No. 1 of Kirby Beard's series. If glue has to be used, any of the liquid glues that are sold, such as "Le Page," &c., will answer the purpose. The card for staging should be good, as some of the common card sold is so rotten that it will not hold the pins firmly.

Every specimen should be labelled, and as much information as possible should be put on the label: the locality and date of capture should always be given, and a number may be added referring to a journal in which fuller data may be recorded. I find it convenient to record in my journal the walk taken and the localities visited, and the rarer species captured on each day, as by this plan a record is kept from which one can see where rarities have occurred, without reference to the specimens themselves, so as to revisit the localities on future occasions. If insects are received from other collectors the original labels should be retained, and a new one stating from whom the specimen was received, &c., added.

There is always a difference of opinion amongst entomologists as to whether cabinets or boxes are best for housing one's captures. I have been used to boxes all my life, and, therefore, am possibly prejudiced in their favour—anyhow, for *Hymenoptera* I greatly prefer them, and use the shallow single-sided ones, which are supplied by Mr. O. E. Janson. These are only just deep enough to take the full length Vienna pins so largely used on the continent. The great advantage of these shallow boxes is that the insects are brought close to the eye, and a lens can be used without removing them from the box; at the same time I must remark that double-sided boxes are more economical.

As a preservative from the attacks of mites, &c., naphthaline is probably the most efficient; personally I use it in the form of

Fleming's "Mikado Moth Papers," which I pin on to the lids of the boxes. This plan, however, will only do for single-sided boxes; for double ones, the naphthaline balls on pins, supplied by naturalists, are the best.

If a cabinet is used, care should be taken to get a good one, with thoroughly well fitting drawers and glasses, good ones are expensive, but in the long run they will repay the purchaser.

It is always a great pleasure (when one has the time) to arrange or re-arrange one's collection, and at this time of year when collecting for the season is nearly over, one begins to think how this may best be done, at any rate how the season's captures may most conveniently be incorporated. Plenty of room should be left, as available space is always a desideratum, and the sizes of the species should be carefully considered before fixing their allotted space; good clear labels, giving the generic and specific names, should be used: the former preceding the species which make up the genus, the latter following each species in order. A collection neatly arranged, properly named, and carefully labelled, is of great scientific value, and at the same time is a source of great pleasure to the owner.

St. Ann's, Woking:

October 1st, 1897.

FLESH-FLIES BRED FROM SNAILS.

BY R. H. MEADE, F.R.C.S.

In a small collection of *Sarcophagæ* (most of which had been bred from locusts in Algeria) sent to me for identification by M. Jules Künckel d'Herculais, of the Paris Museum of Natural History, there was a pair belonging to *S. privigna*, of Rondani (a species closely allied to *S. carnaria*, L.), which M. Künckel said had been bred from *Helix lactea* in Algeria. This is not a new occurrence, for Mr. C. H. Tyler Townsend, of Las Cruces, N. Mex., described in *Psyche* (Feb., 1892) a small *Sarcophaga* which he had bred from a snail, the *Helix thyroides*, Say, and which he named *S. heliciæ*. The interesting point connected with this circumstance is this: were the larvæ of the fly true parasites, or were they deposited upon the snail after its death?, in accordance with the more common habit of these insects to feed upon carrion and decaying fungi.

Bradford: September, 1897.

PSEN CONCOLOR, DAHLBOM:

A NEW BRITISH FOSSORIAL ACULEATE.

BY THE REV. F. D. MORICE, M.A., F.E.S.

The only species of *Psen* at present on the British list is *pallipes*, Panz. (= *atratus*, Dahlb., Thoms., André, &c.), but I am now able to add a second, viz., *concolor*, Dahlb., of which I took a ♀ on June 14th of this year at Byfleet. I did not record the capture at the time, as I hoped to find both sexes. But evidently, for this season at least, that hope must be abandoned, so it seems useless to delay this notice any longer.

Psen concolor is very like a large example of *pallipes*, but there is little difficulty in distinguishing the two species. They differ most conspicuously in the sculpture of the head, and especially of the tubercle or carina between the antennæ. (1) This, in *pallipes*, is shaped like an inverted T—i. e., the lateral branches of the carina start from a point decidedly lower in the face than the insertions of the antennæ, and run past these, *transversely*, towards the eyes; whereas in *concolor* the form is rather that of an inverted Y, the branches running *obliquely*, rather towards the "genæ" than the eyes, starting higher up *between* the insertions of the antennæ, and hardly extending beyond them. (2) The face of *concolor* below the tubercle is foveated, while in *pallipes* it is flat or, if anything, a little convex. (3) The base of the longitudinal carina in *pallipes* is much more dilated than in *concolor*; and is excavated above into a wide, nearly square, or rather "lozenge," fovea, which, in *concolor*, is represented only by a narrow longitudinal groove. (4) The brow, from the antennæ and the tubercle upwards to the ocelli, is smooth and shining in *concolor*; in the other species it is much duller, and somewhat rugose, the puncturation also is far coarser.

Thomson points out another character in connection with the (exterior) pair of longitudinal impressed lines on the mesonotum. These in *concolor* are very long ("ultra medium extensis"), while in *pallipes* they are short and inconspicuous. My specimen shows this character strongly.

While examining my insect in search of other characters, I noticed that its apical ventral segments were not fringed, as in *fresh* examples of *pallipes*, with silvery sericeous hairs. I was not sure, at first, whether this was a specific difference, or merely a consequence of "rubbing" in the particular insect. But, as the specimen appeared to be in very good condition, I concluded for the former alternative, and I now find that the absence of these fringes is mentioned by the late Edm. André (Species, vol. iii, p. 183) as characteristic of *concolor*.

The ♂ of *concolor* I have never seen, but it must be instantly recognisable by its brow, which is smooth and shining, as in the ♀. I gather, too, from the descriptions of it given by Thomson, Tournier, and André, that it has also the branches of the frontal carina *oblique*; though only the last of these authors positively says so. Dahlbom, however (Sphex, Suppl., p. 429), says, on the contrary, that these "ramuli," though oblique in the ♀, are *transverse* in the ♂. In his original description of the species (Sphex, p. 6), he speaks as if the ♂ was as yet unknown to him.

M. Tournier, who has bred both sexes, remarks that he has obtained them from twigs of *Berberis* and ash, but never from bramble, the latter always producing *atratus*. I have generally found *atratus* (*i. e.*, *pallipes*) in palings, mud-walls, thatch, &c., and I believe that my specimen of *concolor* came from an old gate-post. Most of the bramble-piercing insects (*e. g.*, *Pemphredon*, *Trypoxylon*, *Prosopis*, &c.) seem ready to bore, or perhaps to utilize existing holes, in various materials, and not to confine themselves exclusively to bramble-stems.

It is quite likely that other British examples of *Psen concolor* may exist in collections, mixed with the common species. If so, they may easily be distinguished by the characters given above, and it would be very desirable that their possessors should record them.

Woking: October, 1897.

An important proposed work on the Moths of the World.—We have much pleasure in reprinting the Prospectus of this gigantic National undertaking.—Eds.

“Prospectus of a Series of Volumes on the Lepidoptera Phalæna of the Whole World, to be published by the Trustees of the British Museum.—The Trustees of the British Museum having sanctioned the publication of a series of volumes on the Moths of the World, and entrusted Sir George Hampson with the commencement of the work, I beg to call your attention, as being interested in the classification of the *Lepidoptera*, to the following scheme, which has been approved of for the work. The chief want of entomologists working at this subject at the present time is a comparative analysis of the genera in each family, on the lines of the classification originated by Herrich-Schäffer and Lederer for the European fauna, and amplified of late years by Snellen, Meyrick, J. B. Smith, E. L. Ragonot and others, for various groups of the Palearctic, Nearctic, Oriental and Australian faunas, and it is thought that the best way to supply this want is by the publication of such a work as the following.

- (1). The size of the work to be large 8vo, similar to the Catalogues of Birds, Reptiles, &c., each volume to consist of about 500 pages, the exact number being regulated with a view to completing the classification of a family or subfamily; each volume to be complete in itself, with its own index.
- (2). The general arrangement of the work, and of each family and genus, to be from the more specialized to the most generalized forms, the arrangement being modified so as to make the system as natural as possible.
- (3). The work to contain synopses and descriptions of the families, genera, and species of Moths, every described species, about which any exact information can be gained, being included, references only being given to those whose systematic position cannot be ascertained with tolerable exactitude, and no new species being described except such as are represented in the British National Collection.
- (4). No catalogue of specimens will be included, but a somewhat full and minute

account of the range of the species, references to all "types," to collectors' names when known, and to series of specimens of which an account is given in published works.

- (5). The "type" of each genus will be indicated by being placed after the reference to the genus, whether it be retained, treated as a subgenus or synonym.
- (6). The references to the species will be confined to the original reference, to one for each synonym, with dates of publication, to the best figure of the species, to the best description and figure of the early stages, and to such faunistic works and catalogues as are of most general use and importance.
- (7). Local races will be treated as sub-species under sub-headings, with their own references and synonymy.
- (8). Each genus, and all the more prominent sections of genera, will be illustrated by process blocks in the text, showing the facies of a typical species of the genus or section, and all the more prominent details of structure on which the genus is founded.
- (9). An atlas of coloured 8vo plates will also be issued, giving half-figures of as many as possible of the species which have never before been satisfactorily figured, especially of "types" in the British Museum. This will be issued in parts, as is convenient, and will be sold separately from the volumes; it will contain no letter-press except the explanation of the plates, giving the names of the species figured, references to the pages of the volume in which the descriptions will be found, and the country where the species is found.
- (10). The order of the families will, in the main, follow that adopted by Mr. E. Meyrick in his recent work on British *Lepidoptera*, and commencing with the *Syntomidae* will work down through the *Arctiidae* and *Agaristidae* to the *Noctuidae* and *Lymantriidae*; then, beginning again with the *Saturniidae* and their allies, will work downwards by the *Sphingidae* to the *Notodontidae*, *Geometridae*, and *Uraniidae*; then by the *Lasiocampidae*, *Limacodidae*, *Cossidae*, *Psychidae*, and *Castniidae* to the *Zyganidae*; then by the *Drepanidae* and *Thyrididae* to the *Pyrallidae*, *Sesiidae*, and *Tineidae*; and ending with the *Hepialidae* and *Micropterygidae*.

It is obvious that complete success in carrying out the above scheme will depend on the willingness of entomologists and museums to lend specimens of described species which are not available in London, and the authorities of the British Museum (Natural History) hope that as much help in this way, as possible, may be given when application is made for the loan of specimens, which, when examined and figured, will be carefully packed and returned, the Museum paying the carriage going and coming.—(Signed) W. H. FLOWER, *Director*."

A proposed new work on the Macro-Lepidoptera of New Zealand.—We have received from Mr. G. V. Hudson, F.E.S. (of Wellington, N. Z.), the prospectus of a somewhat ambitious work on the above subject, which is ready for publication provided that sufficient support is guaranteed. Two hundred and thirty-four species are described, and with full details of habits and transformations (much of which is original). The size is 4to, and there will be two plain and eleven coloured plates with over 500 figures from the author's drawings. The subscription price is one per copy (the issue limited to 500 copies). The author appeals to colonial

entomologists principally, but his now long experience should render the work necessary and useful to a larger circle. The prospectus says that "all technical descriptive matter is printed in small type, so that these portions may be easily passed over by those" who desire to do so. This is rather a novel reason for the practice of using small type in such cases. We were under the impression that the usual object was to economize space.—EDS.

Occurrence of Crambus perlellus, var. rostellus, in Ross-shire.—On some coast sandhills near Gairloch, Ross-shire, early in September, I met with several examples of a *Crambus* which I cannot distinguish from specimens of *rostellus* taken in the Engadine. The form known as *rostellus* differs from typical *perlellus* by its smaller size, unicolorous, very glossy, yellowish-grey fore-wings, and darker hind-wings; it appears to be locally constant where it occurs, and is often regarded as a good species, though I prefer at present to look upon it as a well marked local form. On the continent it is an alpine form, and its occurrence in Scotland on the sea-level, frequenting *Elymus* in such a way that it must be supposed to have fed upon it, is certainly curious. The climate of the Scotch locality is far from cold, but the rainfall is very heavy.—E. MAYBICK, Elmswood, Marlborough: *Sept. 30th, 1897.*

Epione vespertaria (parallelaria) in Roxburghshire, 1897.—I believe I am correct in stating that *Epione vespertaria (parallelaria)* has not previously been recorded as having occurred in Scotland. The followings facts relative to the capture of this species in Roxburghshire this season will therefore be of great interest. My friend Mr. W. Renton, of Hawick, having informed me that he had taken *E. vespertaria* near that town, I asked him to be good enough to furnish me with full particulars as to time, place and date of capture, and also a specimen for identification, as I thought it just possible that he might have mistaken *E. apiciaria* for *E. vespertaria*, having occasionally seen specimens of the former doing duty for the latter in collections. Mr. Renton very kindly at once forwarded me an undoubted female *E. vespertaria*, though somewhat smaller than those from this locality; three specimens were captured, one male flying and two females at rest on the grass; date of capture, August 26th, 1897; time, 7 to 7.30 p.m.—WILLIAM HEWETT, York: *September, 1897.*

Larva of Eugonia autumnaria at Walmer.—I find in the Magazines scattered references to the capture of *Eugonia autumnaria (alniaria)* on the Kent coast, but have not come across any record of the larva being taken. I think, therefore, that it may be of interest to state that I found a larva of that species on a wall in the Dover Road, Walmer, on August 14th last, and reared from it a ♀ specimen on the 21st inst.—GEO. C. GRIFFITHS, 43, Caledonia Place, Clifton, Bristol: *September 27th, 1897,*

Lepidoptera in South-East Dorset.—During the month of September in south-east Dorset I tramped a great number of miles in pursuit of the partridges which were exceptionally plentiful on most estates, and made the following observations on *Lepidoptera*. *Pyrameis Atalanta* was decidedly common and *P. cardui* was occasionally met with, but *Colias Edusa* was not noticed at all, nor have I seen a single specimen of it this year. *Chrysophanus Phlaeas* was well to the fore, but the

most abundant species was without doubt *Plusia gamma*, which swarmed in every field. Of the Micros, *Stenopteryx hybridalis* and *Plutella maculipennis* (= *cruciferarum*, Z.) were in evidence, but not very numerous, and in a piece of rough common I disturbed from among the gorse bushes two or three fine examples of *Depressaria pallorella*, and succeeded in boxing one of them without incurring the displeasure of my host, though the pursuit of the others had to be abandoned for fear of so doing. Besides the above, a few plebeian insects which call for no comment, such as *Aglais urticae* and *Pieris rapae*, were seen, but no rarities were met with, which was sadly disappointing.—EUSTACE R. BANKES, Burwarton, Bridgnorth: October 17th, 1897.

Recent captures of Coleoptera in Kent and Surrey.—Three or four afternoons' collecting near Sittingbourne, in September, have produced the following species of *Coleoptera*, chiefly by sweeping long grass under some oak and beech trees:—*Anisotoma cinnamomea*, one very large and finely developed ♂; *A. dubia* and *Cyrtusa pauxilla*; *Pocadius ferrugineus* (also in puff-balls, with one example of *Cænocara bovista*); *Rhizophagus parallellocollis*, *Monotoma spinicollis*, and *Conipora orbiculata*, all rare; *Aphodius sticticus* and *A. obliteratus*, commonly, also in dung; *Cis alni*; *Phloiophilus Edwardsi* and *Tetratoma Desmaresti*, a few examples of each; *Anisoxya fuscula* (1), *Apion pomonae* and *A. vorax*, both in profusion; *Trachodes hispidus*, *Orchestes ilicis*, *Sibinia primita*, *Balaninus cerasorum* (1), &c. Beating dead sticks in hedges produced another *Anisoxya fuscula*, with *Homalium iopterus*, *Lissodema 4-pustulatum*, *Pogonochærus hispidus*, and *P. dentatus*; *Acalles turbatus* in plenty, &c.

Other captures within the last few weeks include *Macrocephalus (Anthribus) albinus*, of which I beat two ♀ examples out of dead hedge sticks near Frensham, Surrey, on September 4th; *Colon viennense* ♂, and *Rhinonchus bruchoides*, at Woking, the latter occurring rarely on *Polygonum hydropiper* in company with *Phytobius Waltoni*, which was rather common; *Aphodius consputus* in profusion (and almost to the exclusion of other species of the genus, though *A. porcus* occurred with it) in sheep dung on Chatham Lines, September 25th; *Sitones meliloti*, rather commonly on the ripe seed vessels of *Melilotus officinalis* in a chalk pit at Frindsbury, near Strood, and *Anisotoma rugosa* by sweeping at Cobham Park on October 2nd.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: Oct. 11th, 1897.

Coleoptera near Southampton.—It may interest some Coleopterists to know that during the past August I found, in the neighbourhood of Southampton, several somewhat rare beetles, chiefly by sweeping, a method which one usually finds is almost useless by the end of July. The following were some of the captures:—*Rhinonchus bruchoides*, several on *Polygonum*; *Sibinia primita*, common by sweeping; *Smicronyx jungermanniae*, on heath; *Balaninus rubidus*, by sweeping; *Dorytomus pectoralis*, common on willow; *Strophosomus retusus*, by sweeping heath and beating faggots.—L. M. BUCKNILL, Wellington College, Berks: October, 1897.

[It is true that sweeping is usually unproductive in August, although I have taken many good things during this month; in September, however, and in October, sweeping in damp woods is very profitable; insects often come up on the grass on foggy warm days, when everything is dripping, and the net can be wrung out after every sweep.—W. W. F.]

Coleoptera from the Lincolnshire coast.—At Saltfleet, in 1896, *Cillemus lateralis*, *Bembidium concinnum* and *varium* were common on the muddy banks of the Withern. *Pogonus chalceus* occurred also commonly in the salt marsh. During a short stay at Trusthorpe, near Mablethorpe, in June, 1897, I got the following more or less interesting species :—*Amara ovata*, very common on the sandhills, often picked up dead. *Trechus micros*, a few examples from cracks in the clay underlying the sand. *Saprinus metallicus*, Herbst, this insect was not uncommon on one or two hot days, on the tops of the highest sandhills, and several were taken flying. *Dascillus cervinus*, a number of specimens were found on the shore, washed up by the tide, often half dead ; probably they had been brought down by one of the large drains from inland districts. *Nacerdes melanura*, L., several specimens on woodwork. *Pegylloides chrysocephala*, var. *anglica*, F. This pretty variety occurred rather commonly with the type on low herbage near Sutton. On August 26th, I had a day on the foreshore of the Wash, south of Boston, and found *Pogonus chalceus* abundantly, with *Dichirotrichus pubescens* and *obsoletus*. *Harpalus puncticollis*, occurred in numbers in the concave seed-heads of *Daucus carota*. *Phalacrus corruscus*, *Micraspis sedecimpunctata*, both pretty common, and *Anthicus antherinus*.—ALFRED THORNTLEY, South Leverton Vicarage, Lincoln : October, 1897.

Pityogenes bidentatus, Hbst., feeding on birch.—I received lately from Mr. J. Worley, of Leicester, a fine series of this insect which he had taken "from under dead birch bark." It was plentiful in this situation. Is the insect known to attack other trees in addition to pine or fir?—ID.

Xyela julii, Bréb. (*pusilla*, Dalm.), at Oxshott.—When looking over some of my captures Mr. McLachlan detected a ♀ of this very rare and curious little sawfly, taken by me at the above-named locality on May 3rd, 1896.—ALFRED BRAUMONT, The Red Cottage, Pond Road, Blackheath, S.E. : September 28th, 1897.

[This insect is seldom seen in British collections. It has the aspect of a pigmy *Lyda*, to which genus it is perhaps allied, but with extraordinary antennæ, and the ♀ has the terebrant apparatus exerted and greatly elongated.—R. McL.]

Myrmosa melanocephala in Warwickshire.—In my note on this insect in the September number, I stated that I believed the record from Sutton Coldfield was the only one for Warwickshire. Since then I have received a letter from the Rev. F. D. Morice, who informs me that he recorded a ♂ from Rugby, Ent. Mo. Mag., October, 1891, and also took a ♀ the following year. This I think proves that it must be a rare insect in Warwickshire, or so keen a Hymenopterist would surely have met with it more freely.—RALPH C. BRADLEY, Sutton Coldfield : October 4th, 1897.

Mesochorus tetricus, Holmg., bred in England.—I had the pleasure of receiving a batch of cocoons of *Apanteles octonarius* from the Rev. C. D. Ash, Skipwith, he having obtained them from *Notodonta dromedarius*; from these cocoons I bred *Mesochorus tetricus* (the hyperparasite) as well as the maker. I believe this is the first record of its being bred or recognised in England.—G. C. BIGNELL, Stonehouse, Plymouth : September 15th, 1897.

Phorocera incerta, Meade, at Ipswich.—It may be of interest to state that this fly, described as new to science by Mr. Meade last month, is in all probability quite common in the woods near Ipswich, where I found it sitting on the trunks of large oak trees in the more open spaces in some numbers (though I only took seven specimens, as I did not recognise it as a rarity), together with *Exorista dubia* and *perturbans*, *Bibio laniger*, *Spilogaster duplicata*, and *Calliphora azurea*, on April 26th, 1897. I certainly intend to search for more next year, and if successful, shall then hope to give myself the pleasure of sending specimens to any of "the little band of students" of British *Diptera*, as Mr. Austen happily terms them, who care to have the species. I have sent a specimen to him for the National Collection.—CLAUDE MORLEY, Everton House, Ipswich: October, 1897.

The species of Chrysops in the Lea Valley.—Referring to Mr. Austen's most interesting paper on the British species of *Chrysops* in the last number of this Magazine, I may mention that the staple species of the genus in the Lea Valley is *Chr. relictus*, which is abundant. The usually common *Chr. cæcutiens*, on the contrary, is so scarce that in three seasons' collecting I have only met with a single example (a ♀), which I captured on July 4th, 1895, on the Edmonton Marshes. I have, however, some recollection of a previous capture by a friend on the Marshes at Tottenham in 1894. *Chr. quadratus* I have never taken, and I much doubt that it occurs in the valley.—F. BRANSDEN JENNINGS, 152, Silver Street, Upper Edmonton, N.: October 8th, 1897.

Cimices in birds' nests.—On the 3rd instant I put my suggestion (p. 212, ante) into practice by procuring a lad and a ladder, and having three large sparrows' nests brought down from the eaves of this house, and that was nearly all the result, for the close examination of them over a newspaper afforded only two earwigs. Well, one swallow does not make a summer, nor did three sparrows' nests give a harvest of *Acanthia*, yet I am not discouraged by this failure of the first experiment; it only goes to show that there were no *Acanthia* there, not that they do not exist in other nests, and the problem has yet to be solved.—J. W. DOUGLAS, 153, Lewisham Road, S.E.: September 8th, 1897.

Forficula Lesnei, Finot, at Wallingford.—I am very pleased to be able to record a second capture of *Forficula Lesnei*, Finot, in England. Mr. Horace Donisthorpe has very kindly given me a specimen (♂) taken by him at Wallingford, in Berkshire, in September, 1892.—MALCOLM BURE, Bellagio, East Grinstead: Sept. 22nd, 1897.

Obituary.

The Rev. Andrew Matthews, who died at Gumley, Leicestershire, on September 14th, at the advanced age of 82, had been Rector of the parish for 44 years; he was the son of the Rev. Andrew Hughes Matthews, and was born on June 18th, 1815 (the day of the Battle of Waterloo). His father was himself a naturalist, and a

contemporary of Stephens and Curtis, and other leading entomologists of the time, and he was brought up from childhood with a taste for ornithology and entomology. In 1838 he entered at Lincoln College, Oxford; after taking his degree he was ordained by the Bishop of Oxford to the Curacy of Middleton Stoney in Oxfordshire, and in 1853 he was presented to the living of Gumley. In 1860 he married the daughter of Mr. John Dodd.

Before the death of his brother (the Rev. Henry Matthews, to whom he was much attached) he did a great deal of ornithological and entomological work in conjunction with him, and in 1849 the two brothers published "The History of the Birds of Oxfordshire and its neighbourhood." It was, however, towards entomology that Andrew Matthews had always had a special bent, and like most others, he appears to have been first attracted towards *Lepidoptera*. The writer of this notice remembers his relating the story of his purchasing a whole boxful of *Chrysophanus dispar*, taken in Yaxley Fen, at a halfpenny a piece, and how some years after, hearing that they were fast becoming valuable, he bethought him of his store, and on examining the box found them all devoured except one or two, which he gave to his informant; fortunately, however, the magnificent series in his own collection, together with many other rare *Lepidoptera*, are yet intact.

The *Coleoptera*, however, always had the greatest attraction for him, and at a time when the smaller beetles were almost entirely neglected, he took up the minutest group of all, the *Trichopterygida*, and studied them thoroughly; the result was the appearance in 1872 of his chief work, "*Trichopterygia Illustrata*," a quarto volume, illustrated by his own most carefully executed drawings, in which the full anatomy is given in detail, as well as figures of the various species. His other works have been the following:—"An Essay on the British species of the genus *Myllena*," published in the *Cistula Entomologica*; "A Synopsis of European *Trichopterygida*," which appeared in *L'Abeille*; and "A Synopsis of North American *Trichopterygida*:" he also published a Catalogue of British *Coleoptera* in conjunction with the writer of this notice. In 1888 he was engaged in a description of the *Trichopterygida* of Central America for the *Biologia Centrali-Americana*, and in his 80th year he completed a second volume of his "*Trichopterygia Illustrata*," fully illustrated, as the first volume was, by his own hand from microscopical dissections. The MSS. and drawings are now in the hands of Mr. P. B. Mason, of Burton-on-Trent, and it is hoped that they may soon be published.

While collecting material for his work on the *Trichopterygida* in Sherwood Forest and elsewhere, Mr. Matthews found a large number of very rare beetles, some of which, such as *Plegaderus dissectus*, several species of *Euplectus*, and some of the *Lathridiida*, had hardly ever been taken before in England.

Besides being an entomologist and ornithologist, Mr. Matthews was an excellent amateur horticulturist, and for years exhibited at the Botanical and Horticultural Societies in London, often carrying off first class certificates.

While speaking of him, however, from other points of view, we must not forget that he never allowed his scientific work to interfere with his work in the parish; his Church was beautifully kept up, and the services would have done credit to many a town Church; by his parishioners he was much beloved and respected.

But for his retiring disposition, much more would have been heard of him, but

he always preferred to keep himself at home, and very seldom left Gumley, except for a short collecting expedition in Sherwood Forest, or in order to visit some particular friends of similar tastes. He was most generous in helping those younger than himself with knowledge and with specimens. The writer of this notice is especially indebted to him for many notes on localities and habitats, and for the descriptions of the *Trichopterygida* in the "*Coleoptera of the British Islands*," vol iii, as well as for other assistance.

Mr. Matthews was as keen an observer as White, of Selborne, and in many ways resembled him; in the closeness of his work, however, he far surpassed him; and there have been very few writers indeed in the field of Natural History who have carried on such minute and accurate work as was involved in his delicate dissections and drawings to so advanced an age.—W. W. F.

Joseph William Dunning, M.A., F.L.S.—It is with deep regret we announce the death on October 15th of Mr. Dunning, so long and so sympathetically connected with the Entomological Society of London. A fuller notice will appear in due course.

The death of *Morris Young, F.E.S.*, of the Free Museum, Paisley, has recently been announced. A detailed notice will be given next month.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *August 16th, 1897.*—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. Bradley showed *Æschna grandis* from Sutton, and said that it was quite unusually common there this year, both in the park and in his garden. He also showed *Molophilus murinus* from his garden, where he had taken a fair series this year, although it had not been seen there before. Mr. A. H. Martineau showed larvæ, pupæ, and imagines of *Anthophora furcata*, to illustrate its life-history; also *Salix fuscus* from Wyre Forest with a large spider it had captured; also *Mimesa bicolor*, ♂ and ♀, from Coleshill; and *Ammophila sabulosa* from Wyre Forest. He also said, *apropos* of a note by Mr. E. Saunders in the July number of the Ent. Mo. Mag., on "Muscular energy in a *Tipula* leg after death," that he had watched a dis severed leg of a harvest bug (*Acarina*) move spasmodically round a plate for 35 minutes. He also said that he once removed the abdomen from a living wasp, and then supplied it with liquid food; it drank up the food until it had deposited a large bead of it behind; he then attached a cork body to it, and the insect flew across the room, though of course badly and not straight, as the balance had not been restored. Mr. J. W. Moore showed a little lot of *Lepidoptera* from the Fens, where he had collected them last Whitsuntide, and which included *Senta maritima*, with var. *wismariensis*; a fine series of *Leucania obsoleta*; a single *Tapinostola elymi*; *Acronycta leporina*; *Lithostege griseata*, &c.; also from Scotland, *Arctia fuliginosa*; bred *Hadena pisi*, which were small, dark, and more marbled than usual; and *Acronycta myrica*; also a series of *Agrophila sulphuralis* from Tudden-

ham. Mr. G. T. Bethune-Baker exhibited two drawers from his collection, containing the genus *Aporia*, and parts of the genera *Parnassius* and *Pieris*. He pointed out how naturally *Parnassius* run into *Aporia* through *Mnemosyne*, in which all the red and some of the black markings have gone, and *Stubbendorffii*, in which the dark colour is nearly confined to the nervures; also that *Aporia* runs into *Pieris* through *Aporia Hippiæ* and *Pieris Melete*.

September 20th, 1897.—Mr. R. C. BRADLEY in the Chair.

Mr. G. W. Wynn exhibited a nice series of *Taniocampa opima*, bred from larvæ from the Cheshire coast; also the following insects (all bred) from Wyre Forest:—*Orgyia gonostigma*, *Notodonta trepida*, *Asphalia ridens*, *Geometra papilionaria*, *Amphydasys prodromaria*, and a nice little series of *Endromis versicolor*, reared from a colony of thirteen larvæ found; also *Leucoma salicis* bred from larvæ found near Coventry; a nice series of *Melanthia albicillata* from Sutton larvæ, and *Hecatera serena* found near Kidderminster. Mr. J. T. Fountain showed a series of *Dianthæcia capsicola* bred from larvæ found locally at Small Heath, &c.; also a specimen of *Lycæna argiolus* ♀, which was small, and with the right wing bleached, the outer portion being whitish and the basal half blue as usual; also a specimen of *Lycæna Corydon* ♂ from Swanage, with the white of the hind marginal spots so much extended, that on the fore-wings the black was only left on the nervures, and on the hind-wings the white appeared as large submarginal spots with small dark centres. Mr. R. C. Bradley, *Cynomyia mortuorum*, which he had taken the day before at Droitwich; he had not known of this species formerly in the Midlands. Mr. P. W. Abbott, three specimens of *Aporia cratægi*, taken by Mr. H. Douglas Stockwell near Dover on June 22nd last; also he showed, in conjunction with Mr. Albert J. Hodges, short series each of *Leucania albipuncta*, *Caradrina ambigua*, *Heliothis peltiger*, and *Laphygma exigua*, all taken in South Devon during August last. Mr. and Mrs. Abbott and Mr. Hodges between them secured twenty-four *L. exigua*, and three other entomologists working near them obtained the same number.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: October 15th, 1897.

Mr. Rickard exhibited a specimen of *C. Celerio* taken recently in Cambridgeshire, and an imago of *Carpocapsa saltitans*, reared from the so-called "jumping bean;" also some small ichneumons bred from a probably Deltoid larva; he said that they were peculiar in that they did not kill their host, and he believes that they inhabit the alimentary canal of the caterpillar, and escape by the anus; he had seen the caterpillar carrying the cocoon made by one of these larvæ, holding it with the anal claspers for some days, as if to incubate it. Mr. Farren, a var. of *D. conspersa* from Shetland, *C. corylata* var. *albocrenata* from Rannoch, and *T. gothica* var. *gothicina* from Loch Laggan. Dr. Sharp, several South American cocoons of two species, one Bombycid, the other Psychid: one of the former contained a large ichneumon cocoon in which again were smaller ones of another species, while two others had

been used by a Mason wasp and a leaf-cutting bee respectively to make their nests in; the Psychid cocoons were tubular, about 4 in. long and $\frac{1}{2}$ in. thick, the females being largest, and it appeared that the female moths never leave the cocoon, for one of them was found hardly free from the large chrysalis, embedded in soft scales, and almost maggot-like in appearance. Although the larvæ spend a large part of their life in these cocoons, yet a large proportion were found to have been killed by parasites. Mr. Bedford, three varieties of *E. hyperanthus*, taken near Brockenhurst at the end of June; in the first a female belonging to the "lanceolate" type, all the parts of each ocellus were correspondingly enlarged, the central pupil in some being considerably elongated; in the second, a male, the aberration affected the forewings only, and consisted in a tendency for the yellow band of each ocellus to spread over the surface of the wing, forming irregular and quite asymmetrical blotches, the rest of the ocellus being quite normal; the third case was that of a male in which the right hind-wing only was abnormal, both the black and yellow bands of all the ocelli, except that nearest to the anal angle, being so much enlarged as to run into one another, forming a black streak surrounded by yellow covering the greater part of the wing and traversed by the wing rays, which were dusted over with yellow scales, the pupils of three of the ocelli were quite normal, that of the fourth (next to the costal margin) was barely visible.—L. DONCASTER, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *September 9th, 1897*.—MR. R. ADKIN, F.E.S., President, in the Chair.

Mr. Spindler exhibited a remarkable var. of *Epinephele Tithonus*, in which the whole of the black markings were absent, while the fulvous colour was of the normal depth. It was taken at Luggershall, Sussex. Mr. South, several unusually dark Scotch forms of *Spilosoma menthrasti*, being second generation descendants of Moray parents. Mr. Turner, an unusually grey specimen of *Mamestra abjecta*, taken in the Greenwich marshes; a small red form of *Agrotis tritici* from Woolmer Forest, Hants; series of under-sides of *Enodia hyperanthus* from Carlisle and Chattenden, to show the contrast in the ground colour, the former being of a grey appearance, while the latter were deep and rich; a larva of *Heterogenea limacodes* from Westeham; and larvæ of *Acidalia immorata* from Alpine ova. He remarked upon the undoubted *Acidalia*-like habits and appearance, and said that they fed readily upon knotgrass. Mr. West, of Greenwich, specimens of the local Hemipteron, *Dictynota fuliginosa*, taken on broom at Plumstead. Mr. Adkin, series of *Satyrus Semele*, from Eastbourne and Bournemouth, for comparison, with examples set to show their natural resting positions on the ground. Mr. Tutt remarked that allied continental species had precisely the same habits. Mr. Lucas, specimens and drawings of the scarce dragon-fly, *Agriion mercuriale*, which he had taken in the New Forest. Mr. Dennis, under the microscope, ova of both *Polyommatus Corydon* and *Plebius Aigon*, the former of which had not yet been described. Mr. Tutt, a cabinet drawer containing his series of *Erebia Nerine* and its near allies, together with photographs of the famous Mendelstrasse, in illustration of his paper, which he then read, entitled, "A gregarious butterfly, *Erebia Nerine*: a reminiscence of the Mendelstrasse, with notes on the *Lepidoptera* of the serpents of the Mendelstrasse."

September 23rd, 1897.—The President in the Chair.

Dr. Chapman, F.E.S., of Elmscroft, Red Hill, was elected a Member.

Mr. Malcolm Burr presented to the Society's Museum an almost complete collection of British *Orthoptera*. Mr. Auld exhibited series of *Tapinostola Bondii* from Folkestone; of *Caradrina ambigua*, from Devon, where it has been somewhat common this year; of *Dianthæcia nana* from Shetland; and of *Tæniocampa gothica* also from Shetland. Mr. Adkin, a bred series of *D. nana* from Shetland larvæ, showing much variation; on behalf of Mr. de V. Kane, a specimen of *Larentia flavicinctata* taken in Antrim. Mr. Tutt, on behalf of Mr. Dutton, a very fine and variable series of *Abrazas sylvata* (*ulmata*); a good proportion of the specimens were smoky or partially smoky, and these seemed somewhat thinly scaled, and as they were slightly crumpled and difficult to set, Mr. Dutton had suggested that the aberrations were due to malnutrition. Mr. Tutt also showed three species of *Ascalaphus* which he had captured in the Southern Alps, together with two species of Ant Lion. Mr. Burr, a specimen of *Phyllocrania illudens*, a Mantis from Madagascar, with the leaves with which it is found; it is an extraordinary example of adaptation to surroundings, being very difficult to find, even when attention is called to it in a small box. Mr. Turner, specimens of the Hawk Fly, *Asilus crabroniformis*, from Seaton, Devon, and a series of the Hemipteron, *Enoplops scapha*, taken over a very restricted area in the same locality on the leaves of Coltsfoot. A paper was read, entitled, "The British Day Butterflies, and the changes in the wings of Butterflies," communicated by Prof. A. Radcliffe Grote, A.M., in which he at some length explained his views as to the evolution of the venation, illustrated his remarks by, and applied his theory to, the British Butterflies, criticised the work of Mr. Meyrick, and more fully explained himself to his own critics.

October 14th, 1897.—The President in the Chair.

Mr. Mansbridge exhibited varieties of *Abrazas grossulariata* bred this season from Horsforth larvæ. The line of variation was similar to that observed in former years, viz., a gradual suffusion of the fore-wings with the black colour. Mr. South, small specimens of *Pieris rapæ*, taken at Folkestone by Mr. Sabine, having an additional spot on the hind-wings. He noticed a similar peculiarity in some specimens of *P. napi*, and said that the same variation occurred in the allied Chinese Pierids. Two specimens of *Callimorpha dominula*, v. *rossina*, from Dover, and a bred series of *Acidalia inornata* were also exhibited by Mr. South. Mr. H. Montgomery, on behalf of Mr. E. Montgomery, a series of bred *P. napi*, including specimens with traces of an additional spot, and read notes on the variation shown in the series. He also exhibited a uniformly xanthic specimen of *Epinephele Tithonus*, and a specimen of *A. grossulariata*, having an additional complete band on the hind-wings. Mr. McArthur, a specimen of *Arctia Caja*, with perforated wings, which had been caused by the larva changing on the sandy bottom of the cage, a piece of grit piercing the wing-case. Mr. Cockerell communicated a note upon a peculiar case of protective coloration observed by him in Mexico. Mr. Ficklin, a series of *Polia flavicincta* from Cornwall, small, but brightly marked. Mr. Lucas, an immature form of a locust sent him from Kew Gardens. Mr. West, of Greenwich, series of *Acanthosoma tristriatum* from juniper bushes at Box Hill, and *Pantilius lunicatus* beaten from hazel. Mr. R. Adkin, specimens of *Nonagria*

arundinis (*typhæ*) bred from Shoreham pupæ; one was of a reddish-black, and another mahogany on the fore-wings. He made some remarks upon the cleansing of the bodies of these and similar insects. A considerable discussion ensued on this subject.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *October 6th, 1897*.—The Rev. Canon FOWLER, F.L.S., Vice-President, in the Chair.

Mr. W. H. Bennett, of 15, Wellington Place, Hastings; and Mr. B. Tomlin, of 59, Liverpool Road, Chester; were elected Fellows of the Society.

Mr. Merrifield exhibited specimens of *Aporia cratagi* and *Argynnis Paphia*, subjected to high and low temperatures during the pupal stage. In both species the examples which had been cooled were much darkened. Mr. Tutt showed for comparison the extremes of over 500 examples of *A. cratagi*, bred or captured in Kent between 1860 and 1868, but none were so marked as those which had been artificially treated. Mr. Tutt showed a remarkable melanic aberration of *Nemeophila plantaginis*, in which all trace of the pale ground colour of the hind-wings was lost; also a series of *Abraxas ulmata*, captured during the past summer by Mr. Dutton in the neighbourhood of York. Previously aberrations of the species had been rare, but a large number of this series were suffused with blue-grey or smoky-ochreous. Many of the aberrant forms were cripples. He also showed, for Dr. Riding and Mr. Bacot, bred specimens of both broods of *Tephrosia bistortata* from Clevedon, Somerset, and bred specimens of *T. crepuscularia* and its ab. *delamerensis* from York. Hybrids were exhibited between *T. bistortata* (♂ and ♀) and *T. crepuscularia* (♀ and ♂), between the former and the form *delamerensis* (♀ and ♂), and between the two latter crosses. The offspring of the first crosses were roughly divisible into two groups following the parent forms, those of the second tended to become mongrel in appearance. Hybridization led to the production of continuous broods, and certain broods tended to produce males only. The coloration became more intense with increase in the duration of the pupal stage. Dr. Dixey drew attention to the experiments on hybridization recorded in Dr. Standfuss's "Handbuch der Paläarktischen Gross-Schmetterlingen," and gave a summary of the results. Mr. Champion showed, for the Rev. J. H. Hocking, an example of the long-bodied moth, *Satocoma agrionata*, from New Zealand; also one of *Protopaussus Walkeri*, Waterh., from China, the subject of a later communication; and specimens of the rare British Hemipteron, *Emblethis verbasci*, F., from the Scilly Isles. Mr. Jacoby showed a Halticid beetle, with a singular abnormality, the side-margin of the prothorax being split and embracing a long process. Dr. Chapman exhibited and described varieties of *Spilosoma lubricipeda* and *Acronycta psi* bred by Dr. Riding. In the latter species the characters of the different races were very stable. Mr. Burr exhibited a Mantis, *Phyllocrania illudens*, from Madagascar, with a close resemblance to the dead leaves among which it lived, some of which were shown with it. A new British Coccid, *Kermes variegatus*, from Kent, was exhibited by Mr. Waterhouse. Mr. G. O. Griffiths read a paper on "The Frenulum of the Lepidoptera." Mr. Kirkaldy communicated a "Preliminary Revision of the *Notonectida*, Part I;" and Mr. Waterhouse a "Description of a new Coleopterous Insect of the family *scida*."—W. F. H. BLANDFORD and F. MERRIFIELD, *Hon. Secs.*

A DAY IN KIRBY'S COUNTRY.

BY CLAUDE MORLEY, F.E.S., &c.

I set down the following account of the best day's collecting I have done this year, no less because I traversed ground over which Kirby, Denny, Marsham, and Stephens collected nearly a hundred years ago, than as an example of the beneficial effects upon insects of very capricious meteorological influences during the previous week. On June 10th I trained to Claydon Station, walking thence along the banks of the Gipping, through about a mile of Barham parish, to Great Blakenham, over the river. Striking across country I came out upon the Little Blakenham chalk pits, and so found my way back to Bramford Station. I carried only a sweeping net, and consequently missed many *Hymenoptera* and *Diptera*.

Taking the insects more or less in order, and the beetles first—*Homalota vicina* and *succicola* were common at *Cossus* burrows in an old willow by the Gipping, and *H. pagana* and *depressa* swept from herbage, together with *Philonthus ebeninus*, *Stenus paganus* and *nitidiusculus*, *Hypocyrtus longicornis*, &c. *Anthobium sorbi* (not recorded from Suffolk since the publication of Stephens' "Illustrations)," and *Byturus tomentosus* and *sambuci*, occurred sparingly on *Umbelliferae*, and *Meligethes lumbaris* (new to Suffolk) and *rufipes* upon other flowers, of which there were quantities. By turning over some pieces of timber, about to be converted into hurdles, in a wood at Great Blakenham, I took the first Suffolk specimen of *Rhizophagus parallelocollis*. *Atomaria linearis* and many other common *Clavicornia* were taken by sweeping. The first specimens of *Corymbites quercus*, var. *ochropterus* and *Telephorus lateralis* recorded from the county were swept in Barham, by the river, with numbers of *T. testaceus* and *flavilabris*, and *Malthodes minimus*: *T. hæmorrhoidalis*, *Anthocomus fasciatus*, and *Malachius æneus* also occurred sparingly. *Priobium castaneum* was found singly at Little Blakenham, and *Tetrops præusta* (which is very erratic in its appearance here) was beaten, with *Bruchus rufimanus*, from umbels at Great Blakenham. By sweeping the reeds at Barham *Donacia affinis*, *Psylliodes picina*, *Crepidodera aurata* and *smaragdina* (the last new to Suffolk, though I have subsequently taken it at Southwold and Ipswich) were noticed, and *C. chloris* was not uncommon on willow leaves, basking in the sunshine with *Psylliodes affinis*. The only locality I know for *Batophila ærata* is at Great Blakenham; here it occurred not uncommonly on the outskirts of the wood already referred to. Several black *Isomira murina*, which form has been un-

usually prevalent this year, *Ædemera nobilis*, many common *Anaspis*, and *Mordellistena pumila*, frequented *Umbelliferae*. *Apion carduorum*, *nigritarse*, &c., were also common, with *Phyllobius pomonæ*, *Exomias brunnipes*, *Cionus pulchellus*, *Baqous tempestivus*, *Rhinoncus perpendicularis*, *Amalus scortillum*, *Magdalis pruni*, &c. By sweeping long grass, several *Tychius curtus*, not noticed in the county since Stephens' record in the "Manual," were secured. Of *Ceuthorrhynchus hirtulus* I obtained one specimen, probably from *Draba verna*, which is common hereabouts. A couple of dead *Scolytus multistriatus* in an elm railing at Darnford Hill complete the *Coleoptera*.

The only species of *Hemiptera* I had not before taken in Suffolk were *Gnathoconus albomarginatus* and a *Psallus* (probably *varians*). Great numbers were, however, abroad, e. g., *Globiceps flavonotatus* and *Calocoris striatellus* in the woods, *Dicyphus annulatus*, *Eupteryx atropunctata* (in cop.), &c., on flowers. In the *Neuroptera* also, an additional species was taken, viz., *Hydropsyche angustipennis*. *Æcetes* (*lacustris*?), *Panorpa germanica* and *Platycnemis pennipes* also occurred.

The *Diptera* comprised some interesting species. *Hæmatopota pluvialis* ♂ and *Leptogaster cylindrica* on flowers; one ♂ *Chrysopilus auratus*, swept from aquatic plants, and a pair of *Dioctria rufipes* (in cop.). There were very few *Syrphidæ* about, and those of the commonest: *Chilosia variabilis*, *Chrysogaster Macquarti*, *Rhingia rostrata* ♀, *Chrysoclamys cuprea*, &c. *Umbelliferae* proved very attractive to *Exorista vulgaris*, *Macquartia chalybeata* (both new to Suffolk), *Phyto melanocephala* and *nigra*, *Siphona geniculata*, *Mydæa impuncta*, *Anthomyia radicum*, and *Caricea tigrina*. In a spider's web I found a dead *Lucilia* (*illustris*?) (new to Suffolk). Many common things, *Anthomyia pluvialis*, &c., were sitting on gates and palings in the sunshine. Returning to the marshes, I met with *Cordylura pudica* somewhat commonly, with *Limnia unguicornis*, *Dorycera graminum* (new to Suffolk), and several *Notiphila*, &c., and on flowers in the chalk pits were *Sarcophaga hæmatodes*, *Trypeta onotrophes*, and the curious little *Orellia* [= *Gonyglossum*] *Wiedemanni* (new to Suffolk). The *Hymenoptera* were represented by *Crabro chrysosotmus* in the chalk pits and *O. leucostomus* at Darnford Hall, both sitting by their nests on posts; *Gorytes mystaceus*, *Halictus 4-notatus*, *nitidiusculus*, and *leucozonius* were attracted to *Umbelliferae*, and a fine patch of *Bryonia dioica* blossom in the corner of a field yielded *Nomada alternata* ♀, *Anthophora pilipes* ♀, *Bombus agrorum* ♀, *Andrena nigroænea* (commonly), one *A. chrysosceles* ♀, and one *A. proxima* ♀; this last rarity has not been recorded from the county since Kirby took, I believe, the first British specimen here, as

recorded in his "Monographia Apum" in 1802. One or two nice *Tenthredinidæ* were found upon the attractive *Umbelliferae*. *Tenthredo bicincta* was very common, and with it occurred *T. livida*, *T. cordata* var. *microcephala* ♀, and *T. nigricollis*. *Hoplocampa cratægi* was beaten from May blossom at Bramford, with one or two other common species: *Cladius padi*, *Cephus pygmæus*, &c. Amongst the *Ichneumonidæ* I recognised *Ichneumon sarcitorius*, *Exetastes albitarsus*, and *Tryphon rutilator*. One, a ? *Hemiteles*, was apparently parasitic upon the *Crabro chrysostomus*, as I found them haunting the same boring in the post. I also boxed various small and undetermined *Braconidæ*, *Proctotrypidæ*, and *Chalcididæ*, which close the result of six hours' collecting in Suffolk.

Everton House, Ipswich:

October, 1897.

KERMES VARIEGATUS, GMELIN, ♀: A COCCID NEW TO BRITAIN

BY R. NEWSTEAD, F.E.S.,

CURATOR OF THE GROSVENOR MUSEUM, CHESTER.

Mr. Chas. O. Waterhouse has been most fortunate in discovering this remarkable species. In a letter dated September 25th, he says: "I only found five, on rather thick stems, close to a bud or knot in each case. They were on oak shrubs in a wood, which I believe is part of the Blean Woods, Herne, Kent, September 7th." Two of the specimens, old adults, in most perfect condition, have been kindly given to me for identification. The largest measures 7 mm. in diameter, is pale yellowish-brown, with about seven interrupted transverse bands of a bright chestnut colour; the smallest specimen 5 mm., and has the colour-pattern much less bright. They are hard, hollow, chitinous spheres, containing only the effete skins of the ova; the larvæ having escaped, will probably be found hidden beneath the protecting buds on young shoots of the oak. In comparison with Austrian examples, ours are much larger, and of a more fulvous colour. But as I do not possess a long series from either country, I am unable to state if such characters are constant. I should feel very grateful to any collectors who may be searching for galls if they would look for this species, and forward examples to me, in order that this, my preliminary description, may be made as complete as possible.

Chester: October 19th, 1897.

LOCAL LISTS OF BRITISH *LEPIDOPTERA*.

BY CHAS. G. BARRETT, F.E.S.

(Concluded from page 198).

By the kindness of friends I am enabled somewhat to extend this catalogue of local lists.

In the London district a list of nearly 200 species of *Macro-Lepidoptera* of Highgate, Finchley, and Muswell Hill, with localities and interesting notes, compiled by Master (now Dr.) F. A. Dixey, was published in 1874 by C. C. Harris, High Street, Highgate, and was supplemented two or three years later by further species and information in the "Cholmoleian," by a schoolfellow. Dr. Dixey has favoured me with a sight of these; they are very carefully and accurately drawn up.

For Sussex, a "Natural History of Brighton," by Mrs. Merrifield, mother of one of the present Secretaries of the Entomological Society of London, published, in 1860, by W. Pearce, Brighton, contains—along with chapters on the geology of the district, its *Crustacea*, marine and freshwater *Mollusca*, fishes, birds, insects, and plants, with local lists—a catalogue of over 1000 species of *Lepidoptera*, including *Tineidæ*, drawn up with great care by Messrs. H. Cooke, J. N. Winter, and others. The description of locality in which each species is found is indicated, and the list seems to be very complete, so far as our native species were then worked out.

Dorset. Mr. C. W. Dale requests me to "contradict an error" earlier in this paper (*ante*, p. 189) as to the publishing of the first edition of the "*Lepidoptera* of Dorsetshire." He says: "The nominal publisher, as in the second edition, was Henry Ling, Dorchester. Both editions were actually brought out entirely at my own expense." Mr. Dale's public spirit is to be commended, as he informs me that their publication resulted in a considerable pecuniary loss; one learns from his experience rather to send the local list, when completed and made interesting by notes upon the species, to a magazine for publication! He has most kindly furnished me with a copy of the first edition, which I find to contain a catalogue of 1300 species of *Lepidoptera*, with localities and some notes; and lists of the rarer species in other Orders found in the county, compiled by himself. He also published in 1878, at his own expense, a "History of Gleanings Wootton," Dorset, in which a catalogue is furnished of 910 species of *Lepidoptera*, all of course included in his later county list.

In the same county a "List of Portland *Lepidoptera*," by Mr. N.

M. Richardson, B.A., to whom I am indebted for a copy, was published in last year's "Proceedings of the Dorset Natural History and Antiquarian Field Club." Nearly 600 species are enumerated, and much accurate and valuable information is furnished with reference to the scarcer or more interesting forms. It is further embellished with a plate of three of the more local species of *Tineidæ* drawn by Mrs. Richardson with an accuracy and finish not often seen.

With regard to Wiltshire, my previous remarks must be modified, at least so far as the eastern district thereof is concerned; Mr. W. F. H. Blandford, one of the Secretaries of the Entomological Society of London, has obliged me with a list, drawn up by himself when a lad at school, of 960 species of *Lepidoptera* taken in the Marlborough district—which includes Savernake Forest—published in the "Proceedings of the Natural History Society of Marlborough College," in 1884: a very carefully drawn up and creditable paper for so young an aspirant. In it he refers to a previous list by Mr. Edward Meyrick in the Report of the same Society for 1877; and Dr. N. Manders, Surgeon-Major, has now written from Colombo, Ceylon, as follows:—

"A very complete list of the *Lepidoptera* of the Marlborough district will be found in the Reports of the Marlbro' College Natural History Society. This Society was founded some thirty years ago, and a record of the insects captured has been kept year by year. The first complete list was made by Mr. Meyrick in 1873, the year he left the school. The second complete list, with large additions made chiefly by Mr. Meyrick, was compiled by myself in 1877. Since then two lists have been published—in 1882 and 1892—the latter by Mr. Meyrick. This list is of great value, and comprises 1010 species captured within ten miles of Marlborough. Since that year other species have been added, bringing the number up to close on 1100. The reports are now of real scientific interest, and are of value, as showing in many instances the decline and disappearance of an insect, and its re-appearance after a long interval without apparent cause. I may instance *Melitæa Artemis* and *Thecla w-album* among others."

Mr. Meyrick has most kindly sent me a copy of this list for 1892, and I quite concur with Dr. Manders as to its completeness and value; moreover, he has furnished the names of between thirty and forty species which have been added in subsequent years. He tells me that so far as the remainder of Wiltshire is concerned, two species only are known by him to exist which have not been noticed in the Marlborough district.

For Gloucester and Somerset, a paper communicated to the "Bristol Naturalists' Society," by Mr. George Harding (to whom I am indebted for a copy), and published in their Proceedings for 1895-6, contains a few additions to Mr. Hudd's list, and also the extension of

many species there noticed only in one county to the other, with further information of value.

For the county of Gloucester alone a list of nearly 600 species of *Macro-Lepidoptera* has been drawn up by Mr. C. J. Watkins, of Painswick, who has obliged me with a copy. It is published in Messrs. Witchell and Strugnell's "Fauna and Flora of Gloucestershire;" is drawn up with care and accuracy, and contains a good deal of interesting information.

In Oxfordshire, Mr. Malcolm Burr has furnished me with a list of 176 *Macro-Lepidoptera* found in the neighbourhood of Radley, in a neat little pamphlet, "The Fauna and Flora of Radley and the neighbourhood," by the Radley College Natural History Society. It includes, in addition, lists of other insects of several Orders, with other information, and is a creditable production.

In Northumberland I ought to have mentioned that Mr. Selby's "Fauna of Twizell" includes a large number of species for that county, probably more than for Berwickshire; part of which were incorporated in Mr. Wailes's list, and the rest will doubtless appear in that of Mr. Robson.

In Scotland, Professor J. W. H. Trail has very kindly sent me the "Transactions of the Natural History Society of Aberdeen," for 1878, wherein I find a catalogue of the "*Lepidoptera* of Dee" (Aberdeenshire and Kincardineshire), drawn up by himself, extending to 460 species, and including some of the Tortrices. It contains a great deal of interesting and valuable information on other Orders. He further draws my attention to a list of the *Lepidoptera* of the same district, by Mr. Wm. Reid, published in the "British Naturalist," 1891—3, which contains a few additional species and further information, but which I had overlooked.

Upon seeing my previous remarks respecting the earlier Irish lists, the Rev. W. W. Flemyng, with his usual kindness, sent from Portlaw, Waterford, for inspection, his copy of the "Natural History Review," vol. i, 1854, which contains the Rev. Joseph Greene's list of the *Lepidoptera* of Ireland. This consists of 415 species, with some notes, and also indications of the sources from which a portion of it was obtained. The errors which it evidently contains seem mainly to be attributable to a previous list made out, with an excess of credulity, by Mr. A. H. Haliday, whose attention was really directed far more strongly to other groups.

It thus appears that we have general county lists for Dorset, Devon, Cornwall, Gloucestershire, the Cambridge Fen district, Suffolk,

Norfolk, Herefordshire, Leicestershire, Lancashire, Cheshire, and Yorkshire; with considerable lists for portions of Kent, Surrey, Sussex, Berks, Middlesex, Wilts, Somerset, Oxfordshire, Hertfordshire, Huntingdon, Northamptonshire, Essex, Lincolnshire, Warwickshire, Worcestershire, Staffordshire, Derbyshire, Cumberland, Northumberland, and Durham; but very many of these are confined to the *Macro-Lepidoptera*, and some of them are for very restricted districts.

In all Wales I cannot find a single collected county list!

Scotland has been worked out in districts more than in counties: the most complete lists are for Roxburghshire, the Edinburgh district with Midlothian generally, the Clyde Valley, Perthshire, the Dee district, and some few of the Isles in each group. In Ireland a good deal of work has been done, more especially in the coast counties, but the lists separately published are mainly for very restricted areas rather than for counties, and here, as in Wales and Scotland, large fields of work are still open.

A friendly critic may, and sometimes does, say that a list of species occurring in a certain restricted area, having purely arbitrary limits, is not of especial scientific value; and he may point to the large extent of Yorkshire or Devonshire, and enquire whether a catalogue of the insects of Rutland will be of equal value, or why, for comparison with other counties, we do not call for a separate list for each Riding of Yorkshire? and queries such as these are always more or less effective, especially in the direction of hindering work; but apart from the special personal interest felt by the natives of each county in its productions, it is not possible fully to work out the geographical range of every species, except from information affecting well known and recognisable areas.

I am tempted, however, in this connection to draw attention to work of a nature which has not as yet been in any complete degree carried out. Take, for instance, the county within which I am at this moment writing, Surrey. The soil under my feet is London clay—and a very tenacious clay it is *here* at any rate. This London clay occupies the northern portion of the county nearly to Croydon, Leatherhead, Kingston, Ripley, and Farnham; it is not all heavy, and there is a good deal of sand included with it. Beyond is a strip of chalk—Purley, Croydon, Caterham, Dorking, to Guildford; beyond this a strip of greensand (upper and lower) and gault—Reigate, Godalming, Haslemere, and thence southward; while the rest of the south of the county is wealden and allied strata. All these formations produce numerous species of *Lepidoptera*, the majority of course

extending over the whole, but the more scarce, local, and interesting species being usually limited to one of these geological series. Every entomologist of any experience knows, for instance, how many species are found upon the chalk, in plenty, which are either unknown upon other formations or only seen as casual visitors. Kent is divided into the same formations, in much the same order but in different proportions, and with, in addition, chalk and greensand again in the extreme south. In Sussex the order as in Surrey is reversed; in Hants and Dorset the wealden is omitted, while in the latter the oolite appears, and provides a rich entomological locality in the Isle of Portland. Now we have a list for the Isle of Portland, all the species in it therefore occur upon oolite. But oolite (with the allied sand and clay strata) runs in some form through portions of Dorset, Somerset, Gloucestershire, Buckinghamshire, Northamptonshire, into Lincolnshire; and in the series most closely allied to that of Portland further into Dorset, as well as into Wilts and Bucks.

Of how great interest would be a catalogue, with localities, of the *Lepidoptera* of this whole oolite district, and particularly of that of the Portland series!

Again, there is chalk, as already alluded to, in Kent at Margate and Ramsgate, from Deal and Dover through that county, and Surrey, narrowly to Farnham, where it spreads out broadly into North Hants, northward into Berkshire, westward into Wilts, but also turns southward and back to the south-east by Bishop's Waltham, Midhurst, Arundel, to Brighton, Newhaven, and Beachy Head. From Wilts westward it occupies a large portion of Dorset; and on the north by a narrow passage between the London clay and the greensand, extends round into North Berks, Oxfordshire, Hertfordshire, Cambridgeshire, and through the western portions of Essex, Suffolk, and Norfolk, to near the sea at Holkham and Blakeney. Across the Wash it appears again at Burgh, passes in a rather narrow strip northward through Lincolnshire to the Humber, re-appears beyond Hull, and occupies a large portion of the east of Yorkshire to Filey and Flamborough Head.

Now taking *Polyommatus Corydon*, *P. Alsus*, and *P. Adonis*, *Hesperia comma*, *Agrotis cinerea*, *Acidalia ornata*, *Melanippe rivata* and *M. procellata*, *Phibalapteryx tersata* and *P. vitalbata*, *Eubolia bipunctaria*, *Phoxopteryx comptana*, *Argyrolepis subbaumanniana*, *Panalis Leuwenhoeckella*, *Parasia carlinella*, and many other well known chalk species which do not occur to me at this moment, what an interest there will be in tracing the course and limits of each species; how faithfully it accompanies the chalk, whether it extends to the bordering

greensand, and how many of the species plentiful upon it in the southern counties attain its most northern limit in Yorkshire. Then a further series of enquiries suggests itself as to how far these species follow the chemically allied, though far removed, and much hardened, carboniferous, and other limestones which lie in strips and spots in Devon, all along the southern portions of South Wales, and even in the extreme north of the Principality; also in larger extents in Derbyshire, Lancashire, East Yorkshire, Westmoreland, Cumberland, and Northumberland. That some of them do extend their range on to portions of this formation is certain, since I have found *Polyommatus Alsus* and *Melanippe rivata* not scarce in South Pembrokeshire, where also *Eubolia bipunctaria* was very common, and the beautiful little *Ennychia cingulalis* inhabited sheltered slopes of the limestone cliffs.

Devon is a county of contrasts. Its large middle area is millstone grit, this is edged on the north and south by a broad strip each of carboniferous limestone; north of this is red conglomerate of limestone and sandstone (Exmoor district); south of the southern strip of limestone the great granite mass of Dartmoor; eastward, greensand, new red sandstone, and red marl; to the south, slate-limestone and sandstone, with spots along the coast of blue lias and other limestones, with mica and other slates. How interesting would be a knowledge of the species peculiar to each of these formations! To which of them is it that we owe the sudden extension and increase of *Caradrina ambigua*?

But it is in Yorkshire that the most herculean task is to be found:—to allot the 1340 species to their proper soils! A county of complicated and extraordinary geology, the formations placed mainly in parallel strips running in some degree north and south. Commencing on the eastern side, the southern half is broadly composed of land recovered from the sea, formerly salt-marsh, now pastures; to the west of this is the great band of chalk already alluded to, with its usual narrow border of greensand; north of it alternate bands of oolite, coral-rag, and lias, or closely allied formations, the latter also bounding the greensand and other bands already alluded to; west of this are succeeding broad bands of new red sandstone with its allied formations, magnesian limestone, millstone grit, and coal measures. There is magnificent work for my friend Mr. Porritt, if he will take it up!

These are mere suggestions, roughly thrown out; it would be easy to extend them. Other formations, besides the chalk and the oolite, lie

in roughly parallel bands running through many counties; a complete *Lepidoptera*-fauna of each would be intensely interesting! Other counties, very many of them, are divided into blocks, patches, and strips of various formations; to separate their insect inhabitants accordingly would be good local work, and would lead on toward the more complete insect-history of each geological formation. There is here work in plenty in two directions for those whose scientific zeal and capacity mounts a little above the mere accumulation of an immense collection by means of purchase and exchange.

Before concluding I ought to remark that I make no claim to a knowledge of geology, and may have made mistakes. This is an entomological paper, purely, and has been drawn up with the help of Sir Roderick Murchison's and other geological maps. Therefore, if I have not in all cases given the accurate name of a local form of some large formation, allowances may safely be made, and the errors corrected.

39, Linden Grove, Nunhead, S.E. :
October 15th, 1897.

HOMALOTA (DILACRA) PRUINOSA, KRAATZ, AN ADDITION TO THE
BRITISH LIST.

BY G. C. CHAMPION, F.Z.S.

Some time ago Mr. E. G. Elliman, of Chesham, Bucks, sent me some specimens of a very distinct looking *Homalota* to name, and as I failed to identify the insect at the time, and the species was unknown to Dr. Sharp, I sent an example to M. Fauvel for his opinion. He informs me that it is *H. (Dilacra) pruinosa*, Kraatz (= *Fleischeri*, Epp.), and the species must therefore be added to our list. Mr. Elliman's specimens were captured at Chesham during May and the beginning of June, running swiftly among grass, &c., in the bright sunshine, on a chalky cart track. M. Fauvel states that the species is known to him from Moravia, Vienna, Nice, Marocco, Algeria, Tunis, and Syria. Kraatz's type was from the Italian coast, and that of Eppelsheim from Austria. I possess an example of it from Point Scrophia, Greece (*J. J. Walker*). *H. pruinosa* is nearest allied to *H. fallax*, Kraatz, and *H. luteipes*, Er., these three species being the only European representatives of Thomson's section or genus *Dilacra*. The present insect may be readily identified by its narrow, parallel shape, dull surface, dense, exceedingly fine punctuation, and fine, close pubescence. It is smaller, narrower, and more parallel than *H. fallax*.

or *H. luteipes*, and has joints 5 to 10 of the antennæ more or less transverse. The male, according to Eppelsheim [Wien. ent. Zeit., xi, p. 294 (1892)], has the seventh ventral segment slightly produced, with the apex rounded.

Horsell, Woking :

November 5th, 1897.

NEUROPTERA OBSERVED IN 1897, CHIEFLY IN THE NEW FOREST
AND IN THE FENS.

BY KENNETH J. MORTON, F.E.S.

In July of the present year I had a long-looked-for opportunity of paying a visit to the New Forest, and the following notes are in greater part based on the results of collecting there. Possibly they do not add very much to our knowledge, and to those fortunate Neuropterists whose circumstances allow them to collect south of the Thames, they may have but a pallid interest; at the same time a few species are referred to which do not seem to fall in every one's way.

It would be superfluous to attempt any general description of collecting in the New Forest; plenty of records no doubt exist of first and other impressions. But I may say that I found it delightful and fully up to expectations. For a few days I had the pleasure of my friend Mr. McLachlan's companionship and guidance, and I cannot refrain from saying that I received much courtesy and help from others upon whom I had no claim.

On the way north I stayed in Cambridgeshire for a week or so, and thence made excursions into the neighbouring counties of Huntingdon and Northampton. The principal results there were in *Lepidoptera*, and I had the opportunity of seeing the flight of *Apatura Iris* for the first time. The capture of four of the British species of *Thecla* in and around the same wood within one week seems noteworthy; the species were *Thecla betulæ*, *quercûs*, *w-album* and *pruni*. The last was of course much worn, and the first just appearing.

To a Neuropterist who has collected in some of the well-watered parts of Scotland or Ireland, the comparative scarcity of caddis-flies in the New Forest does not excite wonder; on the other hand, the number of species of dragon-flies is surprising. But perhaps with so many conspicuous day-flying insects to distract attention, my collecting of the more retiring species may have been less thorough than it ought to have been.

In any case, the dragon-flies stand in the front rank of my captures. The number of species taken in the various localities during the period of about three weeks, namely twenty-five, represents a very respectable proportion of the British list, and they are as follows:—

Sympetrum striolatum, Chp.—this was seen everywhere, and was especially common in Monkswood. *S. sanguineum*, Müller, was found both in Cambridgeshire and in Monkswood, but was not common; perhaps too early. *S. scoticum*, Don.—New Forest and elsewhere.

Libellula quadrimaculata, L.—common in New Forest, it was as usual in numbers at Thorney in Cambridgeshire. *L. fulva*, Müller—near Ringwood I had the good fortune to secure a ♂ of this species, fully adult, and having the abdomen in a beautiful blue condition, which Mr. McLachlan informs me he had rarely hitherto seen in the British examples that have come under his notice.

Platetrum depressum, L.—stray specimens in beautifully adult coloration in the New Forest and Monkswood.

Orthetrum caeruleum, F.—the most conspicuous dragon-fly in the New Forest.

Cordulia aenea, L.—frequent at a pond near Ringwood, but getting frayed in the wings.

Cordulegaster annulatus, Latr.—common in New Forest, but not seen with certainty elsewhere.

Anax formosus, V. de Lind.—This fine insect, which I had never seen alive before, was evidently nearly over. Only one was seen in the New Forest, and another was taken near Herne, a veteran ♂ in perfect colours, but with frayed wings.

Aeschna cyanea, Müller, and *grandis*, L.—neither species was taken, although I think both were seen in the south, but in Cambridgeshire, Huntingdonshire, and Northamptonshire, both were taken, and the latter was very common.

Brachytron pratense, Müller—a very fine ♀ taken in Monkswood, must surely have been a late straggler.

Calopteryx virgo, L.—common along all the New Forest streams.

Lestes nympha, Selys—the day after my arrival in Cambridgeshire was dull and damp, and I feared would prove useless for collecting dragon-flies. However, I made at once for the locality whence I had previously obtained a single ♂ of *L. nympha*, and was particularly gratified to find, by sweeping the herbage in one ditch, that *L. nympha* was not only there but was in numbers, which were not subsequently exceeded when the sun was shining and the insects in flight. *L. sponsa* was also present with *L. nympha*, but for the first day or two they were evidently in much less mature condition than the latter species. The later appearance of *L. sponsa* is referred to by Dr. Ris in a recently published paper (Mitth. schw. ent. Gesell., 9, p. 433), and he also mentions that in Switzerland *L. nympha* is apparently intensely local. *L. sponsa* was of course very common nearly everywhere.

Platynemis pennipes, Pallas—seen only near Brockenhurst, where it was common.

Ischnura elegans, V. de Lind., and *Enallagma cyathigerum*, Chp.—common. *Agrion pulchellum*, V. de Lind.—common at Thorney. *A. puella*, L.—common.

A. mercuriale, Charp.—in company with Mr. McLachlan I took the species in some numbers in the locality pointed out by him, where he had found it the previous year, and a few days later it was observed rather more commonly near Emery Down. Mr. McLachlan's suggestion that it is probably not uncommon in the New Forest (Ent. Mo. Mag., vol. xx, 1st series, p. 255) will no doubt prove correct. *Pyrrhosoma minium*, Harris—common. *P. tenellum*, Villers—common at some of the New Forest bogs; the form of the ♀ with black abdomen is not infrequent. *Erythromma najas*, Harris—a good many examples seen at an old brick hole near the Thorney river, flying over water lily leaves.

With regard to the several interesting dragon-flies which are apparently exclusively confined to the south-western counties, and which used to be taken by the old collectors, *Ischnura pumilio*, V. de Lind., is the one which has longest eluded the investigations of more recent workers, and seems still to await re-discovery. It is evidently much more fastidious about the conditions of the water it inhabits than *I. elegans*, which lives almost anywhere, and it is said by Dr. Ris to be found in Switzerland only at ponds and waters with a clay bottom, and to avoid peaty waters. Those searching for *I. pumilio* should also bear in mind that the flight of some dragon-flies is of very short duration. According to Ris, *I. pumilio* in Switzerland flies for a short time at the beginning of June, and soon vanishes to re-appear again in August.

Amongst the *Trichoptera* the most interesting species found in the New Forest was *Phryganea minor*, Curtis, which occurred abundantly about a dried-up pond in one of the enclosures by sweeping the herbage in the evening, and by disturbing them from the chinks of the bark of the surrounding trees during the day. Only one example was found away from this main locality; nearly all taken were females. *P. varia*, Fab., was also taken, and one of the larger species seen but not identified. *Limnophilus luridus*, Curt., is a very characteristic insect of the Forest. The other members of the genus *Limnophilus* taken were *L. griseus*, *L. auricula*, *L. rhombicus*, *L. centralis*, *L. vittatus*, and *L. sparsus*. *Glyptotælius pallucidus*, Oliv., was not uncommon. Isolated examples of *Sericostoma personatum*, Spence, occurred here and there, one ♂ being very curious in having hoary patches on the fore-wings; no difference from the normal form seems to exist in the genitalia as far as I have been able to examine these. *Goëra pilosa*, F., was represented by a few rather small examples. *Leptocerus bilineatus*, L., was the only noteworthy species of its family found in the Forest. *Holocentropus dubius*, Ramb., occurred at a pond near Ringwood. These are the more important caddis-flies noticed. The Hampshire Avon must be a fine stream for *Trichoptera*, but when it was visited the early summer species appeared to have already passed off.

In the other Neuropterous groups there is little to record. Only a single *Raphidia* (*R. notata*, Fab.) was seen. *Hemerobius concinnus*, Steph., was disturbed occasionally from fir trees when these were being knocked for *Phryganea minor*. *Chrysopids* abounded, but they appear to belong to the ordinary species. *Panorpa*

communis and *P. germanica* both occurred, the former being the more common. Of *Perlidæ*, *Nemoura variegata*, Oliv., was the only common species, and the only other that was noticed at all was *Isopteryx tripunctata*, Scop.

Perhaps, on the whole, the time chosen for my excursion was rather late. The results, however, cannot be regarded as unsatisfactory.

13, Blackford Road, Edinburgh :

October, 1897.

Rhizophagus punctulatus, Guillebeau : *synonymical note*.—In the Bulletin de la Société Entomologique de France, 1897, p. 226, in a posthumous paper by F. Guillebeau, a new *Rhizophagus* is described under the name of *R. punctulatus*, upon three specimens from Nantua, Eastern France. This insect, from the description, is evidently conspecific with *R. oblongicollis*, Blatch and Horner [Ent. Mo. Mag., xxviii, p. 303 (1892)], from Sherwood Forest and Bagots Park. *R. punctulatus* is stated by Guillebeau to differ from *R. ferrugineus* and *R. parallelocollis* by the fine punctuation of the thorax and the shortness of the second joint of the antennæ, and from *R. nitidulus* by its ferruginous colour and the absence of the fovea upon the last ventral segment. I possess an example of *R. oblongicollis*, obtained from the Rev. T. Blackburn's British collection, without locality attached.—G. C. CHAMPION, Horsell, Woking : November 8th, 1897.

Bagous nodulosus, Gyll., at Pevensy.—On May 3rd, when collecting near Pevensy with Mr. Donisthorpe, we were fortunate enough to meet with two or three specimens of *Bagous nodulosus*. It was apparently difficult to get, as several subsequent visits only produced a few examples, but a little later in the year I was fortunate enough to obtain a nice series. They are extremely sluggish, and, notwithstanding their large size, are more difficult to detect than any of the other species of the genus, as far as my experience goes ; I found the best way to get them was with the water net. After dragging the aquatic vegetation very violently and repeatedly I took the whole of the mass in the net home, and found that repeated examinations were necessary before all the specimens were detected. To give some idea of how long they will remain without moving, I might mention that one specimen, when placed on a sheet of white paper, was fully ten minutes before it gave a sign of life. Other species that occurred in the same ditch were—*Bagous alismatis* and *B. glabriorstris* (common), *Thryogenes scirrhosus* (in numbers), *Hypera Pollux*, *Cnemidotus impressus*, *Agabus Sturmi*, *Copelatus agilis*, *Hydroporus angustatus*, *Hydrobius oblongus*, and *Hydrophilus piceus*.—W. H. BENNETT, 15, Wellington Place, Hastings : October 25th, 1897.

A note on three British Histeridæ.—There are three genera in the *Histeridæ*, recognised by those who more particularly study the Family, which are not yet generally acknowledged by entomologists in England. *Saprinus maritimus*, Steph., is a typical *Pachylopus* (Erichson, 1834), a genus belonging to both the Old and New Worlds, but unlike *Saprinus* in being restricted in its number of species. About ten or twelve only are known, against about 400 of *Saprinus*. *Kissister*

(Marseul, 1862) is also a natural genus, the type being *Carcinops minima*, Aubé, of the Munich Catalogue; I have met with only two species. The third genus is *Halacritus* (Schmidt, 1893), for *Acritus punctum*, Aubé, and its allies. The name of Marseul's genus is incorrectly given as *Kissiter* by Gemminger and Harold, and also by Scudder.—G. LEWIS, Southampton: October 20th, 1897.

Ilyobates glabriventris and *Odontæus mobilicornis* in Bucks.—On the afternoon of June 6th last I met with two specimens of the former species whilst sweeping in a somewhat moist and sheltered wood, situated between the Chiltern Hills and some miles distant from this town. That this myrmecophilous species should be taken in this manner is most likely accounted for by the fact, that the atmosphere at the time was remarkably still and warm. On the morning of the same day I had noticed one or two common species of *Amara* taking flight from the roadway in bright sunshine, and rising some eight or nine feet into the air, not I believe a common occurrence, and one which gives some idea of the state of the atmosphere.

Odontæus mobilicornis.—During June of this year Dr. Churchill, of this town, sent me a nice ♀ specimen of this rare beetle, which he captured in a room of his house after dark, it having probably been attracted by light.—E. GEO. ELLIMAN, Chesham, Bucks: October 19th, 1897.

Dytiscus lapponicus in the Island of Mull.—Having occasion to visit the Island of Mull during July, I wended my way to the locality of *Dytiscus lapponicus*, and was fortunate enough to secure a nice series for myself, leaving me with a few duplicates for my friends. I noticed that the species was not to be captured except during sunshine, and that the female was much the more scarce.—J. J. F. X. KING, 207, Sauchiehall Street, Glasgow: November, 1897.

Acallia aspersana in Unst.—At page 234 of the present volume Mr. Meyrick mentions having taken *Acallia aspersana* at Gairloch, Ross-shire. He says he thinks it had not been previously recorded north of the Caledonian Canal. At page 8, vol. vii (1896), I record the species as common on all the moors in the Island of Unst.—ID.

Lepidoptera in south-east Dorset.—Since my former note was written (*ante* p. 255) I have learnt from my brother that he saw a specimen of *Colias Edusa* at Corfe Castle on October 16th. I might add that *Pararge Egeria* was decidedly commoner than usual during September in south-east Dorset, and that *Argynnis Aglaia* and *Selidosema ericetaria* (= *plumaria*, Hb.) were, in their seasons, much more plentiful in their haunts on the Purbeck Hills than I have ever seen them before.—E. R. BANKES, Charlton House, Radstock: October 26th, 1897.

Colias Edusa at Seaton.—What a mild autumn we have had! A *Colias Edusa* haunted our neighbouring cliffs, and was seen there as late as October 29th.—A. E. EATON, Woodlands, Seaton: November 10th, 1897.

Coleophora potentilla, Stn., in Kent.—As there does not appear to be any account published of *Coleophora potentilla* occurring in Kent, it may be of interest

to state that I found the larvæ of this moth last month at Chislehurst. They were in considerable numbers on a species of *Rubus* and *Potentilla tormentilla*, but restricted to an extremely limited area.—B. A. BOWER, Lee, Kent: Nov. 6th, 1897.

Plusia moneta, Fab., at Lee, Kent.—On June 30th last I caught in the garden here a specimen of the above hovering over the blossoms of foxglove. The evening was an ideal one for *Plusia* at flowers, as quantities of *Plusia gamma*, several *chrysitis*, and two *H. triplasia* were also attracted by them. It is doubtful if *moneta* is well established here, as a bed of its food-plants grown for the purpose of inducing the females to visit and deposit ova, has so far been unproductive.—ID.

Holocentropus stagnalis, Alb., near Ipswich.—Amongst some *Trichoptera* captured by Mr. Claude Morley I find several specimens of *H. stagnalis* from the marshes at Bramford near Ipswich, April 23rd, 1897, where it was very common amongst reeds in one particular pond. It was first noticed as British by Mr. J. E. Fletcher, near Worcester, early in May, 1886 (*cf.* Ent. Mo. Mag., xxiv, p. 43), and Mr. King has recorded it from near Westport in Ireland (*ibid.*, xxv, p. 235). I feel pretty certain that examples from East Anglia came under my notice years ago, before it had been differentiated, and were probably passed over as aberrant individuals of *H. picicornis*, St.—R. McLACHLAN, Lewisham, London: November 18th, 1897.

Anisobasis annulipes, Lucas, at Queenborough.—In my notes on *Apterygida arachidis* (*ante*, p. 133) I recorded the occurrence in the Queenborough Chemical Works of a very immature Forficulid, which Mr. Malcolm Burr considered might be *Anisobasis annulipes*, Lucas. A search for the creature by Mr. W. W. Esam and myself, early in September, resulted in the capture of two or three mature specimens, which placed its identity beyond doubt; and on October 21st I found several more all fully grown. They were obtained in one place in the yard of the works, among bones and rubbish under some old sacks and barrels. As the *Anisobasis* is decidedly less active than its companion *Apterygida*, besides being of a harder texture, it is much more easy to secure without damage.—J. J. WALKER, Sheerness: November 8th, 1897.

Crabro aphidum, Lep., in Ireland.—On the 29th of last June I took a ♀ of this rare *Crabro* in my garden here. It has been kindly identified for me by Mr. Edward Saunders.—PERCY E. FREEKE, Step House, Borris, Co. Carlow: October 25th, 1897.

Nomada guttulata, Schenck, at Ipswich.—I am delighted to be able to record the occurrence of a *bona fide* British specimen of this species, of which Mr. Saunders, to whom I am indebted for its determination, possesses a single ♀ without locality, as recorded by him in his *Hymenoptera*, p. 293. My example is also a ♀, and was taken from a flower of one of the yellow Composites in the woods to the south-west of Ipswich on May 17th, 1897.—CLAUDE MORLEY, Everton House, Ipswich: October 22nd, 1897.

Notes on rare Diptera in the New Forest in 1897.—In Vol. xxx, p. 250, of this Magazine I recorded the capture of the first British specimen of *Mallota cristatoides*, Lw., taken in Park Ground Enclosure on July 20th, 1894, and although

always on the look out during the following seasons, I never met with it again until this summer whilst collecting with Col. Yerbury on June 23rd in Rhinefield, or (according to the Ordnance Map) Vinney Ridge Enclosure. It was a glorious bright hot day, and I was fortunate enough to secure three and the Colonel one specimen, in addition to other good *Diptera*. We therefore decided to work the same ground on the following day, and were rewarded with four and three *Mallota* respective! After this we each took one in Park Ground Enclosure, making a total of thirteen, and then the species appeared to be over. On the 24th I also took one *Physocephala nigra*, De G., and on the 25th, in my garden at Fern Cottage, one ♀ *Nephrocerus flavicornis*, Lw., which makes the third British specimen taken by myself, and completes a good record for three successive days. On June 8th I took in the garden a pretty fly, identified by Mr. Austen as *Neottiophilum præustum*, Mg., and in writing about the same he stated, "There is in the general collection a single male of the true *N. præustum*, but unfortunately without any locality, and I think that there is little doubt you have again secured a good insect," &c.

On July 3rd, which is about a month before the usual time, I netted a female *Melanostoma hyalinatum*, Fln., but as I left Lyndhurst soon afterwards cannot say whether it was fairly abundant as in 1895. Returning in August I took a single male on the 16th, and then saw no more, so conclude the species was, like several others this autumn, over before the usual time.

Having so far reported successes, I now give an instance of failure, as I think the early appearance of *Callicera aenea*, F., in 1897 will be of interest to Dipterists, and warn them to be on the look out for this beautiful insect during June in similar hot and early seasons. The weather at Lyndhurst throughout the month was exceptionally fine, the sun heat being almost tropical, and on the 11th I visited the beautiful drive at Vinney Ridge, planted on both sides with rhododendrum bushes, which were in full bloom at the time, but *C. aenea* was certainly not amongst the *Diptera* I expected to find. Nevertheless, during the day I saw three specimens flying about the blossom, but through bad luck and bungling failed to secure any of them, although I had one safely in the net, and then lost it through not quite closing the pill box, for which mishap I partially blame the swarms of *Simulidæ*, which were a great nuisance and nearly blinded me. I told Col. Yerbury about this, and a few days afterwards he secured one in almost the identical spot where I saw the last of the three, and on June 22nd he took further specimens in quite another part of the Forest. I also heard of one taken by a lady in a garden at Lyndhurst. — FRED. C. ADAMS, St. Ermin's Mansions, S.W., and Fern Cottage, Lyndhurst: November, 1897.

Obituary.

Joseph William Dunning, M.A., F.L.S., &c., who died on October 15th last, was the only son of Mr. Joseph Dunning, an old and respected solicitor of Leeds, and was born there on November 5th, 1833. In due time he was sent to the educational establishment of Mr. Peter Inchbald near Huddersfield, and remained there some years: Mr. Inchbald was an enthusiastic naturalist, and his establishment proved a nursery for incipient entomologists (*cf.*, Ent. Mo. Mag., 1896, p. 164). He afterwards went to read with an English clergyman at Paris. He entered at Trinity College, Cambridge, graduated in 1856, and took his M.A. degree in 1859; he also

obtained a Fellowship, and was for some time Tutor of his College. He was called to the Bar at Lincoln's Inn in 1861, and soon made for himself a high reputation as a conveyancer and a careful and safe Counsel in Court. He also did literary work in connection with his profession, and edited (or re-wrote) a new edition of "*Jarman on Wills*," a standard authority on the subject. In October, 1890, Mr. Dunning had a paralytic or apoplectic seizure, permanent recovery from which seemed, and proved, hopeless, and in July, 1891, he retired from practice. Not long after his temporary recovery he visited the Pyrenees, taking with him his only son, who had just been called to the Bar: to his father's great grief the young man died after a brief illness. The end came from another attack of the same nature as the first, and a widow now mourns the loss of husband and child.

When a schoolboy Dunning was in the habit of spending his summer vacations at Brandon. He was there so fortunate as to re-discover *Agrophila sulphuralis*, and "awoke and found himself famous" (*cf.* Stainton's Manual, vol. i, p. 295). Soon after this, in 1849, when only sixteen years old, he joined the Entomological Society of London. When at Cambridge, in 1857, he was influential in establishing an Entomological Society there; a similar Society had been established at Oxford in the previous year; and the two combined and produced an "Accentuated List of British *Lepidoptera*" in 1858, the object of which is indicated by the title, and in the compilation of which Dunning did the lion's share. In after life he did but little in the way of writing what he would have termed "scientific" papers, much of what he did write being more of a philological nature, for he was a profound classical scholar, and his ear resented any offence in this direction; he was also a linguist, and had a remarkable faculty for being able to translate almost any European language (the slavonic perhaps excepted) almost at sight, although he had previously made no attempt in that particular direction. Possibly his chief scientific paper was that "On the genus *Acentropus*" (*Trans. Ent. Soc.*, 1872, with Supplement in 1878). That most critical paper showed what he could have done had time allowed, and inclination prompted. It also showed how greatly his legal education and acquirements influenced him in other matters. An example of his reasoning may be seen by an extract from that paper chosen as the "motto" on the title-page of our present volume.

In 1862 he was elected one of the Honorary Secretaries of the Entomological Society of London, a post which he held until his retirement in January, 1871. He entered upon office at a time when the Society was in anything but a flourishing condition, crippled for want of funds, and disturbed by recent internal dissensions. He set to work vigorously, and henceforward the welfare of the Society seemed the one thing he had at heart. Its publications were fearlessly and impartially edited, regardless of the not infrequent indignation of careless authors. Whenever, as was very frequently the case, the financial condition at the end of a year seemed almost hopeless, he forthwith supplied the necessary funds, and when there was no apparent excuse for a direct donation, it was furnished indirectly in the way of adding some expensive work to the library, and by means still more occult, for some of his material help was rendered in a way that was known only to one or two of his colleagues. As his help was rendered impartially, the publications did not suffer at the expense of the Library, or *vice versa*. It is not for the writer of this notice who was his co-Secretary for a few years to specify his numerous acts of munificence.

Suffice it to say, that he also paid the heavy expenses incident on the acquirement of a Royal Charter of Incorporation in 1885, and it was hoped that this important event in the history of the Society would have taken place during his Presidency (1883-84), but it was not to be. Of a truth the Entomological Society of London has reason to be deeply grateful to the memory of J. W. Dunning.

In private life he was reserved, but in social intercourse was always genial and humorous, and his short speeches on festive and other occasions were marked not only by the wide knowledge exhibited, but also by the polished manner of their delivery.—R. McL.

Capt. Edward Yerbury Watson, F.Z.S., &c.—News has been received by telegram of the death of this gallant officer and accomplished entomologist on November 8th, through a shot fired into camp when with the Tirah field force on the Indian frontier expedition. He at the time held the position of Deputy Assistant Commissary General on the Indian Staff Corps. He joined the North Lancashire regiment as Lieutenant in 1884. As an entomologist he turned his attention especially to the *Hesperiidae*, and in 1893, during a furlough, he published in the Proc. Zool. Soc. an attempt at a generic subdivision of that most difficult Family, which will probably form the groundwork for future students. And he was also the author of several other papers, published here and in India. His connection with the Entomological Society of London commenced in 1891.

Morris Young, F.E.S., died somewhat suddenly so long ago as February 26th last, but his death has only recently been generally known. His age was 76. Of his early history we know little, but for many years he was a schoolmaster at Paisley. He published little, and mostly only short notes. What may have been the first of these appeared in the "Intelligencer," vol. i (1856), on a Lepidopterous subject, but it was as a Coleopterist that he was best and widely known, and he added several species of beetles to the British List. Yet he was more than a Coleopterist, more than an Entomologist, for his knowledge in all branches of Natural History was most extensive. In 1870 the Paisley Free Museum was opened, and Morris Young was asked to be Curator. He accepted the position, although a salary of only £90 per annum was attached to it, and although it entailed the abandonment of his previous occupation. But he was a man of simple tastes and few wants, and the position was one after his own heart. He presented his very extensive entomological collection to the Museum, and devoted all his energies to his duties, his skill as a taxidermist saving the institution much expense in preparations. Some years ago he came into some money, and he then helped the Museum financially, and we understand he bequeathed to it the sum of £500 (the interest to be applied towards extending the Entomological collections), and also all his books, &c. He was a bachelor, and shy and reserved amongst strangers, but at the Museum and in company with men of kindred tastes all this was changed, and one saw only the enthusiastic naturalist full of his subject. His loss will be severely felt amongst the none too numerous band of Scottish entomologists. He joined the Entomological Society of London in 1886.

The Rev. Peter Bellinger Brodie, M.A., F.G.S., for 44 years Vicar of Rowington Warwickshire, died on November 1st, aged 82. He was an accomplished geologist, and one of the earliest to take up the study of British Fossil Insects, to which subject he devoted much of a long life. His published papers are very numerous, a large number of them having appeared in the reports of various Midland Natural History Societies. From a more general point of view he was perhaps best known

by his "History of the Fossil Insects of the Secondary Rocks of Britain," an 8vo volume of 130 pages, with 10 plates by Westwood, and a section chart, published in 1845, now very scarce, and probably still the only separate work (as distinct from papers and reprints) that has appeared on Fossil Entomology in this country. He joined the Geological Society so long back as 1834.

Society.

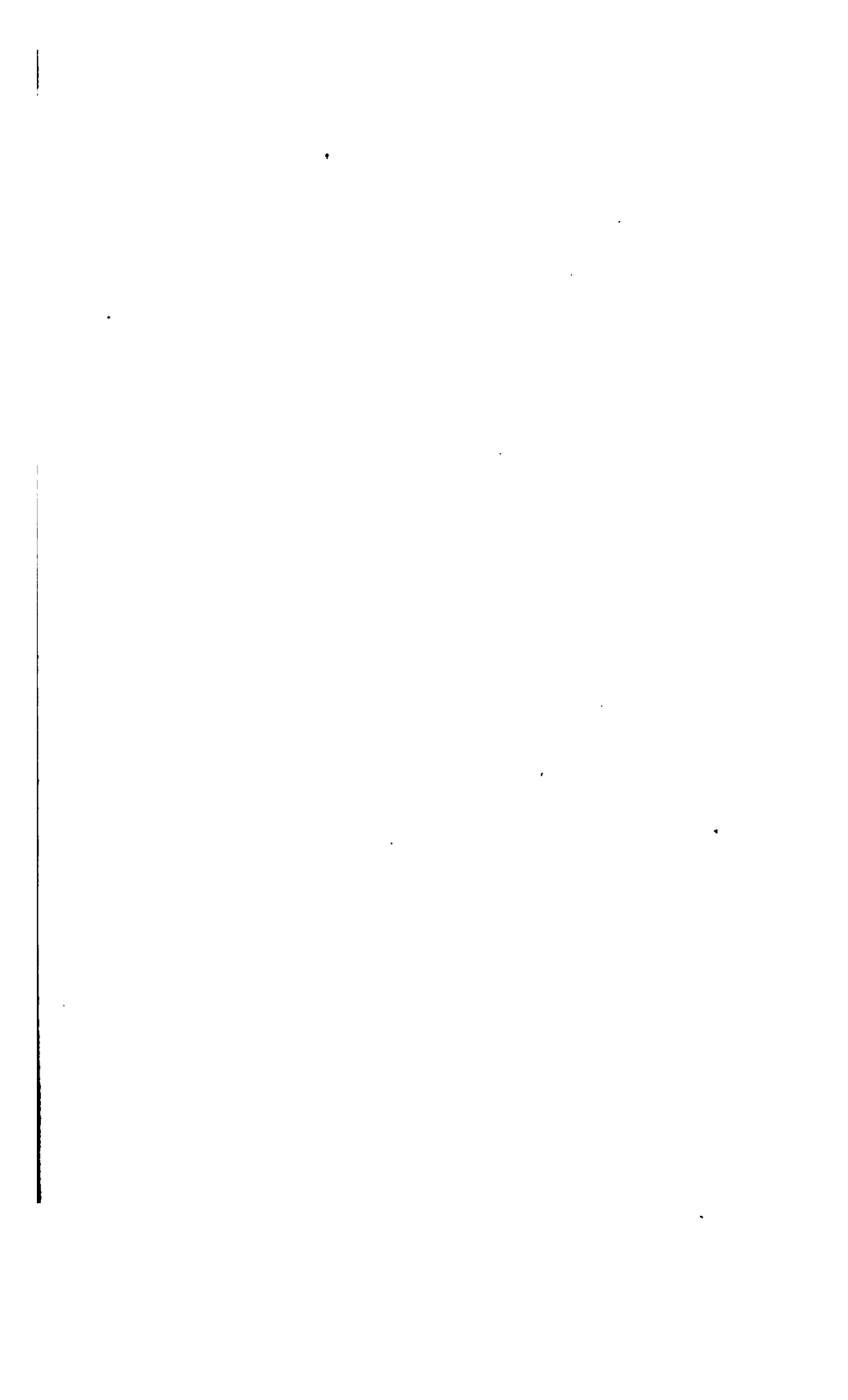
ENTOMOLOGICAL SOCIETY OF LONDON: *November 3rd, 1897.*—Mr. R. TRIMEN, F.R.S., President, in the Chair.

The President announced the death, on October 15th, of Mr. J. W. Dunning, formerly Secretary and President of the Society, and referred to the great interest he had always taken in the Society's affairs. The Treasurer also spoke warmly of Mr. Dunning's continued liberality to the Society in times of financial straits, and of his successful efforts in procuring the Royal Charter, the cost of which he had defrayed.

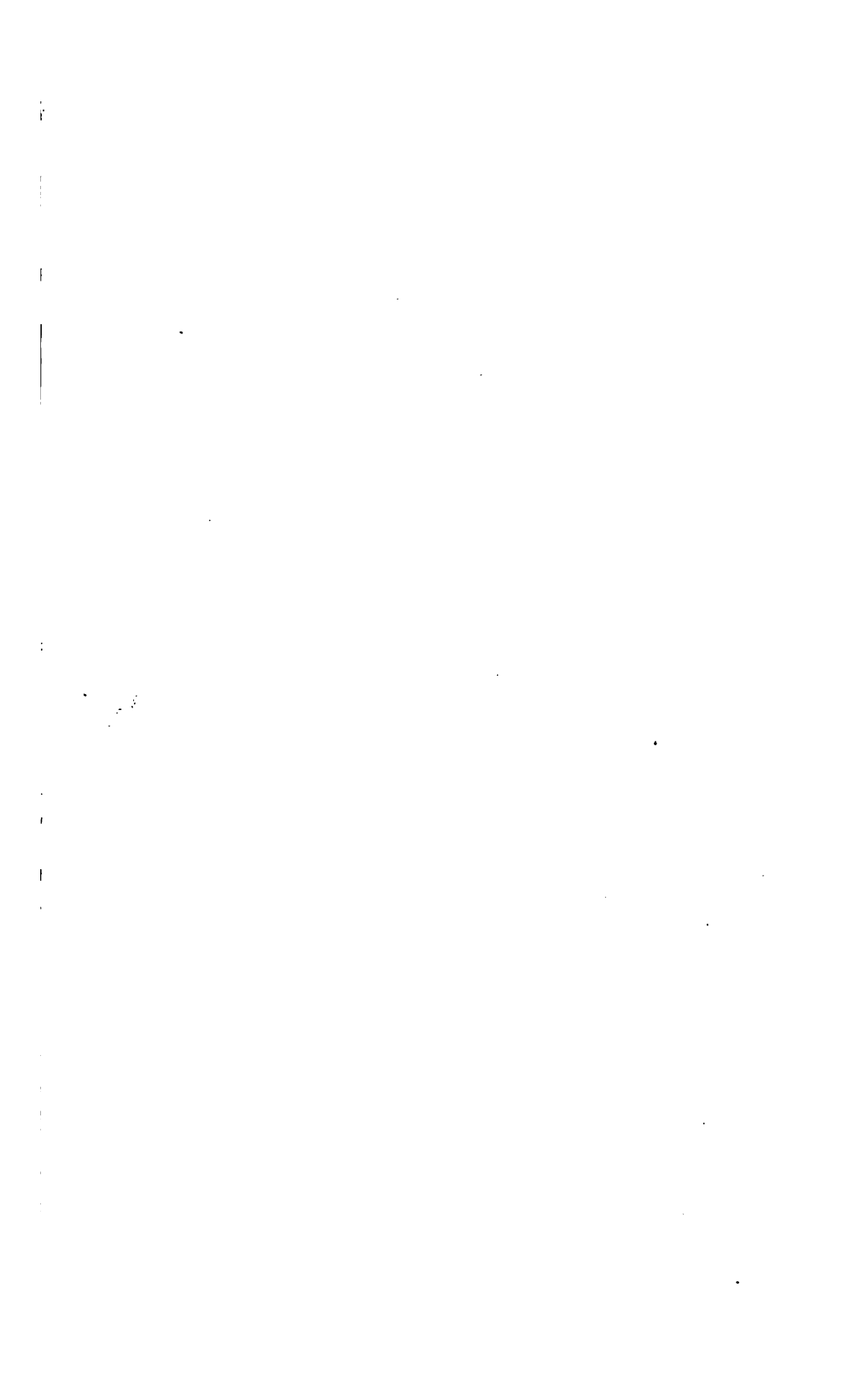
Mr. Selwyn Image, of 6, Southampton Street, W.C., was elected a Fellow of the Society.

Mr. J. J. Walker exhibited specimens of *Anisolabis annulipes*, Luc., an introduced species of earwig taken among bones at the chemical works at Queenborough, and of *Brachysomus hirtus*, Boh., a rare weevil, taken among dead leaves at Chatham. Mr. Janson, a variety of *Melanargia Galatea* of a clear yellowish-cream colour, without trace of the usual black markings. It was captured between Dover and Walmer in 1843, and was still in perfect condition. Lord Dormer, a remarkable openwork cocoon of an unknown Japanese moth, constructed from the larval hairs. Mr. Jacoby, fine examples of both sexes of the Australian Hepialids, *Charagria Ramsayi*, *C. splendens*, and *Hepialus Daphnandri*. Mrs. Nicholl, a selection from the butterflies collected by her this year, in June and July, in the Albarracin Mountains in Aragon, containing several additions to the list of the district published in Madrid by Señor Zapater and Herr Max Korb. The species of greatest interest were *Erebia Zapateri*, Oberth., *Cænonympha iphioides*, Staud., *Satyrus Prieuri*, Pier., and its fulvous ♀ var. *Uhagoni*, which was observed to be much more attractive to the males than the normal form was; *Argynnis Hecate*, Esp., and *Parnassius Apollo*, L., of which a female variety occurred with red-centred ocelli on the upper-side of the fore-wing. The Rev. H. S. Gorham, examples of the following rare beetles from the New Forest: *Notiophilus rufipes*, *Velleius dilatatus*, four specimens, of which two were found in copula, and *Trichonyx sulcicollis*; also a single example of *Lytta vesicatoria* from Shirley Warren. Mr. Tutt, a series of *Noctua*, taken at Romford by the Rev. W. Claxton, all of aberrant form; and, for Mr. J. Merrin, a specimen of *Aglais urtica* with a silvery costal spot on the under-side of the fore-wings, a series of *Melitæa Aurinia*, and an example of *Syrichthus malva*, ab. *taras*, taken near Gloucester. Mr. Kirkaldy, a complete series of species of the genus *Notonecta*, L., specimens of the larva and imago of the very rare *Deinostoma dilatatum*, Say, from Arizona, and specimens of *Antipalaeocoris Marshalli*, Scott, from Ceylon, which was previously recorded from Corsica alone. Papers were communicated—by the President, on "New or little-known Species of African Butterflies;" and by Mr. E. Meyrick, on "New *Lepidoptera* from Australia and New Zealand."—W. F. H. BLANDFORD and F. MEKIBFIELD, *Hon. Secs.*









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